

## F ENT COOPERATION TREA

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C. 20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 29 June 2000 (29.06.00)	
<b>International application No.</b> PCT/DK99/00587	<b>Applicant's or agent's file reference</b> IPB/26659
<b>International filing date (day/month/year)</b> 28 October 1999 (28.10.99)	<b>Priority date (day/month/year)</b> 28 October 1998 (28.10.98)
<b>Applicant</b> FENGER, Jørgen, Holberg	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 24 May 2000 (24.05.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	<b>Authorized officer</b>  C. Villet  Telephone No.: (41-22) 338.83.38
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## TENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

JOERGEN FENGER APS  
Ejby Industrivej 82  
DK-2600 Glostrup  
DANEMARK

Date of mailing (day/month/year) 27 April 2001 (27.04.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference IPB/26659	
International application No. PCT/DK99/00587	International filing date (day/month/year) 28 October 1999 (28.10.99)

1. The following indications appeared on record concerning:		
<input type="checkbox"/> the applicant	<input type="checkbox"/> the inventor	<input checked="" type="checkbox"/> the agent
<input type="checkbox"/> the common representative		
Name and Address BERING, Jesper Internationalt Patent-Bureau Høje Taastrup Boulevard DK-2630 Taastrup Denmark	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
<input type="checkbox"/> the person	<input type="checkbox"/> the name	<input type="checkbox"/> the address
<input type="checkbox"/> the nationality	<input type="checkbox"/> the residence	
Name and Address	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary: <b>The agent has renounced his appointment. All further correspondence shall now be sent to the first named applicant, as specified in the addressee box above.</b>		
4. A copy of this notification has been sent to:		
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned	
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned	
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  Beate Giffo-Schmitt
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference IPB/26659	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DK99/00587	International filing date (day/month/year) 28.10.1999	Priority date (day/month/year) 28.10.1998
International Patent Classification (IPC) or national classification and IPC <sub>7</sub> A47F 7/00, A47F 7/14, A47B 81/06 // G11B 33/04		
Applicant Joergen-Fenger Aps et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  24.05.2000	Date of completion of this report  23.02.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer  Inger Löfving / JA A Telephone No. 08-782 25 00

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☒ the international application as originally filed
- ☐ the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the claims:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement) under article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the drawings:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language english which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheet/fig \_\_\_\_\_

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	<u>1-22</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-22</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-22</u>	YES
	Claims		NO

**2. Citations and explanations (Rule 70.7)**

The invention refers to a carrying device for a number of flat, boxshaped items, such as cassettes, tiles, covers or compact discs in covers. The carrying device is provided with a relative smooth and plane horizontal upper supporting face and with a stop. The stop is adjacent to and placed behind the supporting face and elongate in crosswise direction. A retaining means on its underside has a rubber-elastic portion and a stop for the items, placed behind this portion and elongate in the crosswise direction.

The solution according to the invention, differs from nearest prior art documents WO8807344 A1, US 4630732 A and WO9854688 A1 in the manner that neither of them comprises the feature with a "stop and a rubber-elastic portion". The invention according to claim 1 is therefore novel.

The invention according to claim 1 is not obvious and is therefore considered to involve an inventive step.

There is no reason to doubt the industrial applicability of the claimed device.

Consequently the dependent claim 2 - 22 also satisfy all three criteria.

PCT

RECORD COPY

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No. PCT/DK 99/00587

International Filing Date RO/DK 28 OCTOBER 1999

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum) IPB/26659

Box No. I TITLE OF INVENTION

A CARRYING DEVICE FOR BOX-SHAPED ITEMS

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Joergen Fenger ApS  
Ejby Industrivej 82  
DK-2600 GLOSTRUP  
Denmark

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:

Denmark

State (that is, country) of residence:

Denmark

This person is applicant for the purposes of:

☐ all designated States

☒ all designated States except the United States of America

☐ the United States of America only

☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

FENGER, Jørgen Holberg  
Avnøvej 30  
Svinø  
DK-4750 LUNDBY  
Denmark

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

Denmark

State (that is, country) of residence:

Denmark

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☒ the United States of America only

☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

BERING, Jesper; SIMONSEN, Christian Rosendal; RAFFNSØE, Knud  
Rosenstand; NORDENBÆK, Torben; ROTNE, Jens Styrup; INDAHL, Peter;  
SCHØNNING, Søren; JØRGENSEN, Bjørn Barker; BAGGER-SØRENSEN, Birgitte;  
CARLSSON, Eva; RASMUSSEN, Torben Ravn; NIELSEN, Kim Garsdal;  
OLSEN, Lau Lund  
Internationalt Patent-Bureau  
Høje Taastrup Boulevard 23, DK-2630 TAASTRUP, Denmark

Telephone No.

+45 43995511

Facsimile No.

+45 43999911

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

**Box No.V DESIGNATION OF STATES**

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

**Regional Patent**

- ☒ **AP** ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA** Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA** OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line) .....

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> <b>AE</b> United Arab Emirates                                | <input checked="" type="checkbox"/> <b>LR</b> Liberia  |
| <input checked="" type="checkbox"/> <b>AL</b> Albania .....                                       | <input checked="" type="checkbox"/> <b>LS</b> Lesotho .....  |
| <input checked="" type="checkbox"/> <b>AM</b> Armenia .....                                       | <input checked="" type="checkbox"/> <b>LT</b> Lithuania .....  |
| <input checked="" type="checkbox"/> <b>AT</b> Austria ..... <i>and Utility Model</i> .....        | <input checked="" type="checkbox"/> <b>LU</b> Luxembourg .....   |
| <input checked="" type="checkbox"/> <b>AU</b> Australia .....                                     | <input checked="" type="checkbox"/> <b>LV</b> Latvia .....   |
| <input checked="" type="checkbox"/> <b>AZ</b> Azerbaijan .....                                    | <input checked="" type="checkbox"/> <b>MD</b> Republic of Moldova .....                                      |
| <input checked="" type="checkbox"/> <b>BA</b> Bosnia and Herzegovina .....                        | <input checked="" type="checkbox"/> <b>MG</b> Madagascar .....   |
| <input checked="" type="checkbox"/> <b>BB</b> Barbados .....                                      | <input checked="" type="checkbox"/> <b>MK</b> The former Yugoslav Republic of Macedonia .....                |
| <input checked="" type="checkbox"/> <b>BG</b> Bulgaria .....                                      | <input checked="" type="checkbox"/> <b>MA</b> <del>MAROC</del> .....   |
| <input checked="" type="checkbox"/> <b>BR</b> Brazil .....  | <input checked="" type="checkbox"/> <b>MN</b> Mongolia .....   |
| <input checked="" type="checkbox"/> <b>BY</b> Belarus .....                                       | <input checked="" type="checkbox"/> <b>MW</b> Malawi .....   |
| <input checked="" type="checkbox"/> <b>CA</b> Canada .....  | <input checked="" type="checkbox"/> <b>MX</b> Mexico .....   |
| <input checked="" type="checkbox"/> <b>CH and LI</b> Switzerland and Liechtenstein .....          | <input checked="" type="checkbox"/> <b>NO</b> Norway .....   |
| <input checked="" type="checkbox"/> <b>CN</b> China .....   | <input checked="" type="checkbox"/> <b>NZ</b> New Zealand .....  |
| <input checked="" type="checkbox"/> <b>CU</b> Cuba .....  | <input checked="" type="checkbox"/> <b>PL</b> Poland .....   |
| <input checked="" type="checkbox"/> <b>CZ</b> Czech Republic ..... <i>and Utility Model</i> ..... | <input checked="" type="checkbox"/> <b>PT</b> Portugal .....   |
| <input checked="" type="checkbox"/> <b>DE</b> Germany ..... <i>and Utility Model</i> .....        | <input checked="" type="checkbox"/> <b>RO</b> Romania .....  |
| <input checked="" type="checkbox"/> <b>DK</b> Denmark ..... <i>and Utility Model</i> .....        | <input checked="" type="checkbox"/> <b>RU</b> Russian Federation .....                                       |
| <input checked="" type="checkbox"/> <b>EE</b> Estonia ..... <i>and Utility Model</i> .....        | <input checked="" type="checkbox"/> <b>SD</b> Sudan .....  |
| <input checked="" type="checkbox"/> <b>ES</b> Spain .....   | <input checked="" type="checkbox"/> <b>SE</b> Sweden .....   |
| <input checked="" type="checkbox"/> <b>FI</b> Finland ..... <i>and Utility Model</i> .....        | <input checked="" type="checkbox"/> <b>SG</b> Singapore .....  |
| <input checked="" type="checkbox"/> <b>GB</b> United Kingdom .....                                | <input checked="" type="checkbox"/> <b>SI</b> Slovenia .....   |
| <input checked="" type="checkbox"/> <b>GD</b> Grenada .....                                       | <input checked="" type="checkbox"/> <b>SK</b> Slovakia ..... <i>and Utility Model</i> .....                  |
| <input checked="" type="checkbox"/> <b>GE</b> Georgia .....                                       | <input checked="" type="checkbox"/> <b>SL</b> Sierra Leone .....   |
| <input checked="" type="checkbox"/> <b>GH</b> Ghana .....   | <input checked="" type="checkbox"/> <b>TJ</b> Tajikistan .....   |
| <input checked="" type="checkbox"/> <b>GM</b> Gambia .....  | <input checked="" type="checkbox"/> <b>TM</b> Turkmenistan .....   |
| <input checked="" type="checkbox"/> <b>HR</b> Croatia .....                                       | <input checked="" type="checkbox"/> <b>TR</b> Turkey .....   |
| <input checked="" type="checkbox"/> <b>HU</b> Hungary .....                                       | <input checked="" type="checkbox"/> <b>TT</b> Trinidad and Tobago .....                                      |
| <input checked="" type="checkbox"/> <b>ID</b> Indonesia .....                                     | <input checked="" type="checkbox"/> <b>UA</b> Ukraine .....  |
| <input checked="" type="checkbox"/> <b>IL</b> Israel .....  | <input checked="" type="checkbox"/> <b>UG</b> Uganda .....   |
| <input checked="" type="checkbox"/> <b>IN</b> India .....   | <input checked="" type="checkbox"/> <b>US</b> United States of America .....                                 |
| <input checked="" type="checkbox"/> <b>IS</b> Iceland .....                                       | <input checked="" type="checkbox"/> <b>UZ</b> Uzbekistan .....   |
| <input checked="" type="checkbox"/> <b>JP</b> Japan .....   | <input checked="" type="checkbox"/> <b>VN</b> Viet Nam .....   |
| <input checked="" type="checkbox"/> <b>KE</b> Kenya .....   | <input checked="" type="checkbox"/> <b>YU</b> Yugoslavia .....   |
| <input checked="" type="checkbox"/> <b>KG</b> Kyrgyzstan .....                                    | <input checked="" type="checkbox"/> <b>ZA</b> South Africa .....   |
| <input checked="" type="checkbox"/> <b>KP</b> Democratic People's Republic of Korea .....         | <input checked="" type="checkbox"/> <b>ZW</b> Zimbabwe .....   |
| <input checked="" type="checkbox"/> <b>KR</b> Republic of Korea .....                             | Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet: |
| <input checked="" type="checkbox"/> <b>KZ</b> Kazakhstan .....                                    | <input checked="" type="checkbox"/> <b>CR</b> Costa Rica .....   |
| <input checked="" type="checkbox"/> <b>LC</b> Saint Lucia .....                                   | <input checked="" type="checkbox"/> <b>DM</b> Dominica .....   |
| <input checked="" type="checkbox"/> <b>LK</b> Sri Lanka .....                                     | <input checked="" type="checkbox"/> <b>TZ</b> Tanzania .....   |

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

<b>Box No. VI PRIORITY CLAIM</b>		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application:* regional Office	international application: receiving Office
item (1) 28.10.1998 (28 October 1998)	BA 1998 00404	DK Denmark		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

\* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

### Box No. VII INTERNATIONAL SEARCHING AUTHORITY

**Choice of International Searching Authority (ISA)**  
(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / SE

**Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):**

Date (day/month/year)

Number

Country (or regional Office)

### Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 3

description (excluding  
sequence listing part) : 13

claims : 3

abstract : 1

drawings : 9

sequence listing part  
of description :

Total number of sheets : 29

This international application is accompanied by the item(s) marked below:

1. ☐ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☐ other (specify):

Figure of the drawings which  
should accompany the abstract: 1

Language of filing of the  
international application: Danish

### Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

International Patent-Bureau



BERING, Jesper (Agent)

For receiving Office use only		2. Drawings:  <input type="checkbox"/> received:  <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:	RO/DK 28 OCTOBER 1999 (28.10.99)	
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA / SE	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

Date of receipt of the record copy  
by the International Bureau:

16 NOVEMBER 1999

16. 11. 99



## HOLDEINDRETNING TIL KASSEFORMEDE EMNER

Opfindelsen angår en holdeindretning til et antal flade, kasseformede emner, såsom kassetter, brikker, foderaler eller lignende. Emnerne er typisk høje, brede og tynde. Opfindelsen er særlig egnet til opbevaring og fremvisning af CD-plader i foderal, anbragt indbyrdes på samme måde som bøger i en bogreol.

CD-plader (Compact Disc) anvendes mest til lagring af digitale musikindspilninger og EDB-programmer. Holdeindretninger til CD-plader i foderal er almindeligt kendt, i overordentlig mange varianter. De findes også til DVD-plader (Digital Video Disc) og MiniDisc-plader (CD-plader i lille format). Alle disse typer plader opbevares almindeligvis i plastikfoderaler (kassetter) af ganske samme konstruktion. Foderalerne har holdeorganer til pladen eller pladerne, og indvendige holdeorganer til indlægsetiketter eller -hæfter.

For enkelhedens skyld benævnes alle disse tre pladetyper i deres foderaler nedenfor som "CDer", og ved udtrykkene "CD, CDen, CDer og CDerne" skal forstås enhver af de indledningsvis nævnte arter af emner.

En holdeindretning af den nævnte art, designet af designergruppen TOOLS og fremstillet og markedsført af fa. Tommy Larsen, Silkeborg, DK, har form af et i vandret retning langstrakt, ekstruderet (og dermed prismeformet) emne med nærmest C-formet tværsnit. De to endepunkter af det C-formede tværsnit danner herved retlinede, vandret forløbende kæber, som er forsynet med gummikanter der vender mod hinanden. Emnet er beregnet til at fastgøres på en væg, med de to kæber vendende bort fra væggen og ud mod lokalet.

Afstanden mellem de to kæber er således afpasset at en CD netop passer stramt ind mellem kæbernes gummikanter, når den holdes på højkant, med ryggen ud mod lokalet. Den nederste kæbe stikker noget længere ud i lokalet end den øverste, hvorved CDen fastholdes på sikker måde, selv om den belastes nedefter af tyngdekraften eller eventuelle stødpåvirkninger.

Det er imidlertid en ulempe ved denne holdeindretning at CDen fastholdes forholdsvis stramt mellem kæberne. Dette gør det unødigt besværligt at indsætte og udtage CDer, og da disses ydre (selve foderalet) er fremstillet af en ganske skør plastiktype, går de let itu ved indsætning i eller udtagning fra den kendte holdeindretning.

Det er endvidere en ulempe ved den kendte holdeindretning at CDen ikke har en veldefineret orientering i rotationsretningen om en vandret akse parallel med væggen som holdeindretningen er anbragt på. Da der ikke findes veldefinerede stop for CDens bageste kant, samtidig med at CDen går stramt ved indsætningen, er det vanskeligt for brugerne at nå en veldefineret position for hver enkelt CD, med det resultat at de ofte ikke er rettet ind efter hinanden når de sidder i holdeindretningen.

Endelig er det en ulempe ved den kendte holdeindretning at man kun kan gribe om CDen på dennes to mod lokalet vendende hjørner ved udtagning af CDen fra holdeindretningen.

En anden holdeindretning af den indledningsvis nævnte art og designet af Frank Nielsen, er kendt fra et katalog "Living Design - Music is the Dream Language of the World" fra firmaet LIVING DESIGN v/ AM Denmark A/S, Kokkedal, DK; side 23.

Denne holdeindretning består af en ekstruderet skinne som er monteret vandret på en væg eller lignende. Skinnen har nær sin overkant to tætsiddende, langstrakte, vandrette kæber, hvoraf den øverste er trukket noget tilbage mod væggen og den underste rager en del frem mod lokalet.

Mellem disse to kæber kan anbringes en inderste ende af en arm eller udligger, som i sin hvilestilling rager vandret ud i lokalet og desuden kan svinge i et vandret plan og dermed indtage en ønsket vinkel med væggen, set i det vandrette plan.

CDerne anbringes hver hængende under en af disse arme ved at kroge på undersiden af armen bringes i indgreb med udspæringer som findes på den øverste kant af CDens

federal i forbindelse med holdeorganerne til indlægs-etiketten eller -hæftet.

Herved kan CDerne svinges sideværts frem og tilbage, så man kan "blade" i dem ligesom i en bog. Herved er  
5 det let at komme til at betragte CDernes forsider, når man skal vælge en ud til afspilning eller indlæsning i computer.

CDerne med påsiddende arme kan formentlig hægtes af vægskinnen når de skal hentes frem til afspilning. Hvis  
10 CDerne skal transporteres, er det derimod sædvanligvis nødvendigt at afmontere armene.

Det er en ulempe ved denne holdeindretning at CDerne ikke sidder særlig tæt i sideværts retning. Det er nemlig nødvendigt med en betydelig indbyrdes vandret afstand  
15 mellem CDerne, for at de kan komme til at svinge tilstrækkelig langt. Holdeindretningen får derved en betydeligt forringet opbevaringskapacitet per beslaglagt rumfangsenhed, i forhold til holdeindretninger hvor CDerne opbevares tæt.

20 Det er desuden en betydelig ulempe ved denne holdeindretning at armenes kroge er skrøbelige på grund af deres nødvendige samvirken med de standardiserede udsparinger i CDen, og at CDernes foderaler som nævnt er fremstillet af et meget skrøbeligt materiale.

25 Det er et formål med opfindelsen at tilvejebringe en holdeindretning af den indledningsvis omtalte art, som er befriet for de beskrevne ulemper ved de kendte holdeindretninger, men som alligevel tillader tæt opbevaring af CDerne, og tillader at man kan blade i CDerne som i en bog.

30 Ifølge opfindelsen tilgodeses dette formål ved at bæreorganet har en forholdsvis glat og plan, i hovedsagen vandret, øvre bæreflade og hosliggende bærefladen et bag ved denne liggende, i tværretningen langstrakt stop for emnerne, og at holdeorganet på sin underside har et gummielastisk afsnit, og et bag ved dette afsnit liggende, i  
35 tværretningen langstrakt stop for emnerne.

Ved at bærefladen er plan og glat, muliggøres det at CDerne kan svinge om en tilnærmelsesvis lodret akse,

selv om deres vægt i hovedsagen hviler på bærefladen. Desuden lettes indsætning og udtagning væsentligt, idet CDens nederste, inderste hjørne ubesværet kan glide ind på plads, selv efter at holdeorganets gummielastiske afsnit har opnået et bremsende indgreb med CDens øverste, inderste hjørne.

Ved at bæreorganet har et stop bag ved bærefladen, opnås for det første at CDen fastholdes sikkert i sin indsatte stilling. Fordi CDen i hovedsagen fastholdes i de to hjørner som er inderst (forrest i indsætningsretningen), vil tyngden påvirke den til drejning om en vandret akse i holdeindretningens tværretning; dette svarer til en indad mod stoppet virkende kraft forneden ved bæreindretningen, og denne kraft optages af stoppet. Samtidig sikres det at alle CDerne er rettet ind efter hinanden, hvorved der opnås et gunstigt synsindtryk.

I foretrukne udførelsesformer strækker bæreorganet og holdeorganet sig forholdsvis kort ud fra holdeindretningens forside, særlig foretrukket henholdsvis ca. 10 og ca. 5 mm.

Herved lettes den omtalte bladen i CDerne, idet omdrejningsaksen i den svingende bladebevægelse kommer til at ligge tilsvarende tæt ved CDens bagkant. Dette giver en overordentlig bekvem adgang for brugeren til at betragte CDernes forsider, hvor oftest den mest relevante og lettest genkendelige information er anbragt.

Det foretrækkes at holdeorganets gummielastiske afsnit omfatter en mod emnerne vendende kant eller læbe, og at læben i givet fald peger i retning mod holdeorganets stop, dvs. ind mod holdeindretningens forside.

Ved at det er en kant eller læbe der indgriber med CDens øvre kant, opnås både en formindsket indsætningskraft og en bedre fastholdelse, p.g.a. kantens hhv. læbens eftergivelighed. Denne eftergivelighed giver i sig selv en mindre modstand ved indsætning af CDen i holdeindretningen. Under fastholdelsen i holdeindretningen betyder kantens hhv. læbens eftergivelighed at den gummielastiske kant som ligger an mod CDens øvre kant deformeres i stedet for at

skride, når CDen belastes til udtrækning. Herved beholder gummikanten et bedre "greb" i CDens overkant.

I en særlig foretrukken udførelsesform er læben rettet mod holdeindretningens stop. Herved får læben en  
5 modhage-virkning der fastholder CDen endnu bedre.

Forsøg har desuden vist at en sådan indadrettet løbe på overraskende måde forbedrer sit greb i CDens overkant, hver gang CDen svinges frem og tilbage i bladebevægelsen. Dette antages at skyldes at læben har to uafhængige greb i overkantens to side-hjørnekanter, der begge har en lille, opefter rettet vulst. Således kan løbes greb i den vulst der er på vej udefter i svingebevægelsen, tvinge den modsatte vulst længere ind under læben, som følge af svingebevægelsen. På denne måde modvirkes på meget  
10 effektiv måde at svingebevægelsen ved bladen i CDerne kommer til at løsne CDerne fra holdeindretningen.

Det er desuden et formål med opfindelsen at tilvejebringe en udstillings- og/eller fralægningsplads til CDerne, således at holdeindretningen kan anvendes til udstilling af CDer Hos forhandlere, på biblioteker eller lignende, samt anvendes til fralægning af foderalet medens en CD afspilles eller indlæses.  
20

Ifølge opfindelsen tilgodeses dette formål ved at holdeindretningen har en forneden på indretningens forside anbragt hylde. CDerne kan herved stilles på hylden, lænet op ad forsiden.  
25

I en foretrukken udførelsesform har hylden i tværetningen forløbende trin eller vulster. Disse er fortrinsvis savtakformede med en lav, stejl eller i hovedsagen lodret kant vendende mod bæreorganets stop.  
30

Herved opnås det at en CD som står på hylden, lænet op ad holdeindretningens forside, ikke kan skride mod hylden og derved faldē ned.

Det foretrækkes at bærefladen ligger højere end hylden. Herved hindres det at CDerne berører hylden under svingebevægelsen, hvilket ville tendere til at forrykke deres omdrejningsakser udefter, bort fra holdeindretningens forside. Det foretrækkes i denne forbindelse at savtak-

35

formens spidser er beliggende i et vandret plan som ligger 0,2-1 mm, fortrinsvis ca. 0,5 mm under bærefladens plan.

Det foretrakkes at holdeorganet og bæreorganet er forbundet med en i det væsentlige lodret væg som fortrinsvis udgør de to stop. Dette giver en enkel og dermed omkostningsbesparende opbygning af holdeindretningen.

Holdeorganet og/eller bæreorganet kan på deres forsider have holdere såsom åbne kanaler til at holde skilte, etiketter eller lignende.

10 Hermed opnås at en f.eks. alfabetisk inddeling af CDerne ikke optager sidevarts plads mellem CDerne. Disse kan således anbringes sidevarts tæt sammen, og alligevel være inddelt på en systematisk måde.

15 Ifølge opfindelsen har holdeindretningen fortrinsvis ophængningsorganer som kan indgribe med beslag til at fastgøres på en væg.

Det er endvidere et formål med opfindelsen at muliggøre at holdeindretningerne kan ophænges meget præcist i lod på en enkel måde.

20 Ifølge opfindelsen tilgodeses dette formål ved at holdeindretning forneden på bagsiden har støtteorganer til at støtte mod en væg som holdeindretningen ophænges på, hvilke støtteorganer fortrinsvis er indstillelige i længden.

25 Fortrinsvis har støtteorganerne form af stykker af et ekstruderet gummiemne som har i holdeindretningens tværetning langsgående svækkelser til at muliggøre afkortning efter ønske af støtteorganerne.

30 Det er endelig et formål med opfindelsen at muliggøre at et antal holdeindretninger kan ophænges lige så enkelt som een holdeindretning, på en sikker måde.

Ifølge opfindelsen tilgodeses dette formål ved at holdeindretningen har gribeorganer til at bære en nedenfor anbragt holdeindretning af samme art, fortrinsvis ved samvirken med dennes ophængningsorganer.

I en foretrukken udførelsesform er gribeorganerne og ophængningsorganerne på to sammenkoblede holdeindretninger indrettet til at låses sammen, fortrinsvis ved at en

stiv tråd indføres i en kanal som udgøres af udsparinger i både gribeorganerne og ophængningsorganerne.

Ved at holdeindretningen udformes med i tværretningen langstrakt form med i hovedsagen konstant tværsnit, 5 fortrinsvis ved at dens bærende konstruktion udgøres af et ekstruderet, langstrakt metalemne, opnås en særdeles enkel, rationel og billig fremstilling af holdeindretningen, samtidig med et tiltalende udseende.

Opfindelsen vil i det følgende blive forklaret nærmere ved hjælp af udførelseseksempler under henvisning til 10 tegningen, på hvilken

fig. 1 viser en holdeindretning ifølge opfindelsen, ophængt på et vægbeslag på en væg,

fig. 2 viser to sammenkoblede holdeindretninger 15 ifølge opfindelsen, ophængt på et vægbeslag på en væg,

fig. 3 viser et tværsnit i et ekstruderet metalemne til fremstilling af holdeindretningen i fig. 1,

fig. 4 viser holdeindretningen i fig. 1, set fra siden, med en CD stående på skrå,

20 fig. 5 viser holdeindretningen i fig. 4 med en CD anbragt i indretningen,

fig. 6 i forstørret målestok viser et gummiprofil til holdeorganet i holdeindretningen i fig. 4-5,

fig. 7 i forstørret målestok viser et plastikprofil 25 til kantmarkeringer i holdeindretningen i fig. 4-5,

fig. 8 i forstørret målestok viser et gummiprofil til et støtteorgan til holdeindretningen i fig. 4-5,

fig. 9 i forstørret målestok viser et tværsnit i vægbeslaget i fig. 1,

30 fig. 10 i forstørret målestok viser et detailbillede af ophængningen af holdeindretningen i fig. 1 på et vægbeslag, og

fig. 11 i forstørret målestok viser sammenkoblingen af de to holdeindretninger i fig. 2.

35 — Samme henvisningstal har samme betydning i alle figurer.

I fig. 1 ses en holdeindretning 1 ifølge opfindelsen. Holdeindretningen 1 har en krop eller væg 11

som danner et bærende chassis. I fig. 1 er chassisets 11 forside 14 synlig. Holdeindretningen 1 er langstrakt i sin tværretning 15.

På chassiset 11 sidder foroven et holdeorgan 5 i  
5 form af et fremefter udragende, nedefter åbent rør som delvis omslutter et gummiprofil med en nedefter og bagud ragende løbe 13.

Holdeorganet 5 har på sin forside en underskåren  
rille 18, hvori der i den i fig. 1 viste udførelsesform er  
10 indlejret en sort pyntestrimmel af plastik.

Lidt længere oppe sidder bag på chassiset 11 et langstrakt, krogformet ophængningsorgan 12 som indgriber i et vægbeslag 2 som er fastgjort til en ikke vist væg i et lokale.

15 Forneden på chassiset 11 sidder et bæreorgan i form af en fremefter ragende liste 6. Listen 6 fortsætter i en hylde 7, som helt fremme krummer nedefter ved 16. Hyldens krumning 16 afsluttes i en fod 8 som i den viste udførelsesform består af et stykke O-ring-snor indlejret i  
20 en udsparring i hyldens 7 krumme parti 16.

Foran på det krumme parti 16 ses en til rillen 18 svarende rille 17, også her forsynet med en pyntestrimmel.

Chassiset 11 fortsætter nedefter til en lignende fod 9 som er tilvejebragt på samme måde som foden 8.  
25 Forneden bagpå chassiset 11 er indlejret en lignende O-ring-snor 10 der fungerer som støtteorgan mod den væg som holdeindretningen er ophængt på.

I holdeindretningen 1 er anbragt en CD 3 som er skubbet ind mellem holdeorganet 5 og bæreorganet 6. Den  
30 hænger herved ved sin egen vægt, uden at berøre hylden 7, fastholdt af deformationen i gummiløben 13.

På hylden 7, lænet op mod chassisets 11 forside 14, er anbragt en CD 4 med sin forside vendt fremefter, til  
beskuelse.

35 ~~-----~~ Fig. 2 viser to holdeindretninger 1, 20 af samme art som i fig. 1. Den øverste holdeindretning 1 hænger på vægbeslaget 2, som i fig. 1, medens den nederste holdeindretnings 20 ophængningsorgan 12 (se fig. 1) ved 21



indgriber i et gribeorgan 19 på den øverste holdeindretning 1, nederst på chassissets 11 forside 14 (se fig. 1).

Fig. 3 viser et tværsnit i et langstrakt, ekstruderet metalemne 22 til fremstilling af holdeindretningerne i fig. 1-2. Regnet fra oven ses følgende elementer i tværsnittet:

Det krogformede ophængningsorgan 12; det rørformede holdeorgan 5 med den underskårne rille 18 og en åbning 23 til at modtage et gummiprofil; det vægformede chassis 11 med forsiden 14 og en bagside 24; et antal vulster 37 på chassissets 11 forside 14 (se nedenfor); en let underskåren, cirkulær rille 25 til at optage støtteorganet 10; bæreorganet 6 som strækker sig fra chassissets 11 forside 14 til et svagt knæk 26 på hyldens 7 overside; chassissets 11 nederste forlængelse 27 med en rille 28 svarende til rillen 25 og til optagelse foden 9; hylden 7, som på sin overside har et antal (her: seks) savtakformede trin 29 til sikring af skråt anbragte CDer 4 (fig. 1); og hyldens 7 kumme parti 16 med den underskårne rille 17 og en rille 30, svarende til rillerne 25, 28, og til at optage foden 8.

Vulsterne 37 har kun dekorative formål; de bryder forsidens 14 flade på en optisk behagelig måde, og samtidig vil de ganske effektivt maskere de uønskede, såkaldte trækstriber som næsten altid forekommer på ekstruderede metalemnar.

I fig. 5 ses holdeindretningen 1, 20 fra siden. ifølge opfindelsen fig. 4 er vist de forskellige gummi- og plastikdele som hører til holdeindretningen.

I rillen 18 er anbragt et plastikprofil 31 (se fig. 7). Dette profil 31 kan f.eks. anvendes som pynt i hele holdeindretningens udstrækning i tværretningen 15 (fig. 1), eller det kan leveres med holdeindretningen 1, 20 udsåret i korte stykker med påtrykte bogstaver eller tal, til inddeling af holdeindretningen i sektioner til alfabetisk eller numerisk inddeling af CDerne 3 i holdeindretningen 1, 20.

I åbningen 23 i holdeorganet 5 er indsat et langstrakt gummiprofil 32 (se fig. 6), som strækker sig i hele holdeindretningens bredde i tværretningen 15 (fig. 1). Profilet 32 har en bagudvendende - dvs. mod chassiset 11 vendende - løbe 13, hvis virkning vil blive forklaret nedenfor.

I rillen 25 er indsat et støtteorgan i en alternativ udførelsesform 33 (i stedet for udførelsesformen 10 i fig. 1, der er en O-ring-snor). Funktionen af støtteorganet i udførelsesformen 33 vil blive forklaret nedenfor.

I rillerne 28 og 30 er indsat fødder 9 og 8 i form af stykker af O-ring-snor, som vist i fig. 1-2.

I rillen 17 er indsat en plastikstrimmel 34 til pynt, som i fig. 1.

På hylden 7 er som i fig. 1 hensat en CD 4. CDen 4 hviler med sin underste kant 35 mod hyldens 7 overside, idet den indgriber i et af de savtakformede trin 29. CDens 4 øverste kant 36 støtter mod chassisets 11 forside 14.

Som det fremgår af fig. 4, vil trinene 29 fange CDens 4 nederste kant 35, når CDen hensættes på hylden 7. Forsøg viser at dette på overraskende effektiv måde forhindrer at CDen skrider på hylden 7 og dermed falder ned, også selv om CDen hensættes hurtigt eller "sjusket".

I fig. 5 illustreres holdeindretningens 1 hovedfunktion: at opbevare CDer tæt, som bøger i en bogreol.

En CD 3 er indsat i holdeindretningen 1, i indsætningsretningen 37. Herved er gummilæben 13 på gummiprofilet 32 blevet deformeret som det fremgår af fig. 5. Følgelig udøver læben 13 et nedadrettet tryk på CDens 3 øvre kant 40. Dette nedadrettede tryk vil forøges, hvis CDen 3 bevæges i udtagningsretningen 38, og det vil formindskes hvis CDen bevæges i indsætningsretningen 37. Dette følger af let forståelige geometriske forhold. Læben 13 virker altså som en modhage, og har på grund af

sine materialeegenskaber en stor friktion mod CDens øvre kant 40.

CDens 3 nedre kant 39 hviler med sit nederste hjørne 41 mod bæreorganet 6, der som tidligere nævnt kun strækker sig indtil kanten 26. Friktionen mellem CDens hjørne 41 og bæreorganet er ganske lille, da materialerne typisk vil være hård plastik og elokseret aluminium der som bekendt har en overordentlig lille indbyrdes friktion.

Tyngden vil søge at dreje CDen i omdrejningsretningen 42, idet CDen kun bæres i sine hjørner 41 og 43. Da CDen 3 imidlertid fastholdes med betydelig friktion i hjørnet 43 af gummilæben 13, vil den trykkes ind mod chassiset 11 forinden. Herved vil hjørnet 41 stoppes af chassiset 11 - eller i den viste udførelsesform rettere den nederste vulst 37 - der derved virker som et stop, som er anbragt umiddelbart op til bæreorganet 6. Hjørnet 41 bliver altså fikseret på et veldefineret sted.

På samme måde vil CDens 3 øvre hjørne 43 gå mod et stop ved indsætningen, hvilket stop udgøres af chassiset 11, eller rettere den øverste vulst 37. Også det øverste hjørne 43 er altså fikseret på et veldefineret sted.

Følgelig er CDens 3 anbringelse i holdeindretningen 1 meget veldefineret, og derfor vil alle CDerne i holdeindretningen være rettet pænt ind; de vil sidde nøjagtigt på linie og give et tiltalende og ordentligt indtryk.

Når CDen svinges sideværts som et blad i en bog, dvs. at den forreste del af CDen (den del længst væk fra chassiset 11) bevæges i sideretningerne 44 (fig. 5), vil den øvre kant 40 gnubbe mod læben 13. Imidlertid har denne kant en ikke uvæsentlig bredde, som det ses i fig. 4 (kanten 36), og derfor vil den ene side (hjørnekant) af kanten 40 bevæge sig lidt udefter i retningen 38, og den anden side (hjørnekant) af kanten 40 vil bevæge sig lidt indefter, i retningen 37.

Forsøg har overraskende vist, at læbens 13 tidligere omtalte modhagevirkning ved disse bevægelser faktisk opnår at trække CDen længere og længere ind mod chassiset 11, selv om CDen ved svingebbevægelserne (44) 5 skulle blive trukket lidt udefter i retningen 38. Herved får læben den virkning at den overordentligt effektivt forhindrer at CDerne i holdeindretningen 1 falder ud, når der blades i dem, selvom dette foretages med mere eller mindre voldsomhed.

10 På den anden side sikrer fjedringen i læben 13 at CDerne let kan flyttes sideværts i tværrretningen 15 (fig. 1) når der skal indsættes nye CDer i rækkefølgen, eller der i øvrigt skal omorganiseres.

Læbens 13 omtalte modhagevirkning er ikke til 15 hinder for let udtagning af CDerne, idet de blot kan svinges i den modsatte omdrejningsretning af retningen 42, hvorved det nederste hjørne ubesværet vil trækkes ud fra bæreorganet 6 på grund af den omtalte lave friktion.

Fig. 6 viser gummiprofilet 32 i større målestok. 20 Profilet er i den viste udførelsesform vendbart, med to læber 13, så det kan vendes hvis den ene læbe skulle blive slidt.

Fig. 7 viser plastikprofilet 31. Det er udformet af et så elastisk materiale at det let kan komprimeres i 25 retningerne 45, når dets to læber 46 skal indsættes i underskæringerne i rillen 18 (eller rillen 17). På forsiden 47 kan der påtrykkes bogstaver, tal eller anden information.

Fig. 8 viser tværsnittet af støtteorganet 33. Dette 30 har en cirkulær vulst 48 som passer i rillen 25. Støtteorganets dimension 49 kan let ændres uden værktøj ved at overrive organet i en af rillerne 50, der virker som brudanvisere. Herved kan afstanden af chassissets 11 nedre dele fra lokalets væg justeres, således at 35 holdeindretningen kan ophænges nøjagtigt i lod, også på en ujævn væg.

Fig. 9 viser tværsnittet af vægbeslaget 2. I fig. 10 er vist hvorledes vægbeslaget 2 samvirker med

ophængsorganet 12, når holdeindretningen ophænges på en væg 51.

Endelig viser fig. 11 hvorledes gribeorganet 19 på den øverste holdeindretning 1 i fig. 2 samvirker med ophængsorganet 12 på den nederste holdeindretning 20 i fig. 2.

Ifølge opfindelsen kan gribeorganet 19 forsynes med en rille 53, og ophængsorganet 12 med en rille 54, således at der kan indføres en låsetråd 52 i den i tværretningen langstrakte hulhed der defineres af disse to riller. Herved låses de to holdeindretninger meget effektivt til hinanden, således at det forhindres at den nederste 20 slipper og falder ned.

Selv om der i beskrivelsen kun er omtalt anvendelsen af holdeindretningen ifølge opfindelsen til opbevaring og fremvisning af CD'er, er der intet til hinder for at opfindelsen anvendes til andre emner af samme flade, kasseformede facon. Det eneste der kræves, er at emnerne er lige store i een af deres to største dimensioner, typisk højden.

Sådanne andre emner kan for eksempel være emballerede varer i flade æsker, bøger eller hæfter stramt indpakket i plastikfolie. Anvendelse til massive emner som skal kunne tages frem og sættes på plads jævnlige, såsom serveringsbakker, er også mulig.

## P A T E N T K R A V

1. Holdeindretning til et antal flade, kasseformede emner, såsom kassetter, brikker eller foderaler, og navnlig CD-plader i foderaler, med disse emners største vægge an-  
5 bragt i lodrette planer, hvilken holdeindretning har en forside til at modtage emnerne, og en bagside, og omfatter et øvre, i tværretningen langstrakt holdeorgan og et neden under holdeorganet og parallelt med dette forløbende og stift forbundet nedre, langstrakt bæreorgan, k e n d e -  
10 t e g n e t ved:

- at bæreorganet har en forholdsvis glat og plan, tilnærmelsesvis vandret, øvre bæreflade og hosliggende bærefladen et bag ved denne liggende, i tværretningen langstrakt stop for emnerne; og
- 15 - at holdeorganet på sin underside har et gummielastisk afsnit, og et bag ved dette afsnit liggende, i tværretningen langstrakt stop for emnerne.

2. Holdeindretning ifølge krav 1, k e n d e -  
t e g n e t ved at bæreorganets bredde ud fra holdeindretningens forside, regnet fra bæreorganets stop er mindre end  
20 mm, fortrinsvis 5-15 mm og særlig foretrukket ca. 10 mm.

3. Holdeindretning ifølge krav 1 eller 2, k e n -  
d e t e g n e t ved at holdeorganets bredde ud fra holdeindretningens forside, regnet fra holdeorganets stop til  
25 det gummielastiske afsnit, er mindre end 15 mm, fortrinsvis mindre end 10 mm og særlig foretrukket ca. 5 mm.

4. Holdeindretning ifølge et hvilket som helst af de foregående krav, k e n d e t e g n e t ved at holdeorganets gummielastiske afsnit omfatter en mod emnerne vendende kant.  
30

5. Holdeindretning ifølge et hvilket som helst af kravene 1-3, k e n d e t e g n e t ved at holdeorganets gummielastiske afsnit omfatter en mod emnerne vendende løbe-  
læbe -

35 6. Holdeindretning ifølge krav 5, k e n d e -  
t e g n e t ved at løben peger i retning mod holdeorganets stop.

7. Holdeindretning ifølge et hvilket som helst af de foregående krav, k e n d e t e g n e t ved at omfatte en forneden på indretningens forside anbragt hylde.

8. Holdeindretning ifølge krav 7, k e n d e -  
5 t e g n e t ved at hylden har i tværretningen forløbende trin.

9. Holdeindretning ifølge krav 8, k e n d e -  
t e g n e t ved at trinene er savtakformede med en lav, stejl eller i hovedsagen lodret kant vendende mod bære-  
10 organets stop.

10. Holdeindretning ifølge et hvilket som helst af kravene 7-9, k e n d e t e g n e t ved at bærefladen ligger højere end hylden.

11. Holdeindretning ifølge krav 10, k e n d e -  
15 t e g n e t ved at savtakformens spidser er beliggende i et vandret plan som ligger 0,2-1 mm, fortrinsvis ca. 0,5 mm under bærefladens plan.

12. Holdeindretning ifølge et hvilket som helst af de foregående krav, k e n d e t e g n e t ved at holde-  
20 organet og bæreorganet er forbundet med en i det væsentlige lodret væg som fortrinsvis udgør de to stop.

13. Holdeindretning ifølge et hvilket som helst af de foregående krav, k e n d e t e g n e t ved at holde-  
organet og/eller bæreorganet på deres forsider har holdere  
25 såsom åbne kanaler til at holde skilte, etiketter eller lignende.

14. Holdeindretning ifølge et hvilket som helst af de foregående krav, k e n d e t e g n e t ved at omfatte ophængningsorganer til ophængning af indretningen på en væg  
30 eller lignende.

15. Holdeindretning ifølge krav 14, k e n d e -  
t e g n e t ved forneden på bagsiden at have støtteorganer til at støtte mod en væg som holdeindretningen ophænges på.

16. Holdeindretning ifølge krav 15, k e n d e -  
35 t e g n e t ved at støtteorganerne er indstillelige i længden.

17. Holdeindretning ifølge krav 16, k e n d e -  
t e g n e t ved at støtteorganerne udgøres af stykker af

et ekstruderet gummiemne som har i tværretningen langs-  
gående svækkelser til at muliggøre afkortning efter ønske.

18. Holdeindretning ifølge et hvilket som helst af  
de foregående krav, k e n d e t e g n e t ved at omfatte  
5 ben eller fødder til at støtte på en tilnærmelsesvis vand-  
ret understøtningsflade såsom en bordplade.

19. Holdeindretning ifølge et hvilket som helst af  
kravene 14-18, k e n d e t e g n e t ved at omfatte  
gribeorganer til at bære en nedenfor anbragt holdeindret-  
10 ning af samme art, fortrinsvis ved samvirken med dennes  
ophængningsorganer.

20. Holdeindretning ifølge krav 19, k e n d e -  
t e g n e t ved at gribeorganerne og ophængningsorganerne  
på to sammenkoblede holdeindretninger er indrettet til at  
15 låses sammen, fortrinsvis ved at en stiv tråd indføres i en  
kanal som udgøres af udsparinger i både gribeorganerne og  
ophængningsorganerne.

21. Holdeindretning ifølge et hvilket som helst af  
de foregående krav, k e n d e t e g n e t ved at holde-  
20 indretningen er af i tværretningen langstrakt form med i  
hovedsagen konstant tværsnit.

22. Holdeindretning ifølge krav 21, k e n d e -  
t e g n e t ved at holdeindretningens bærende konstruktion  
udgøres af et ekstruderet, langstrakt metalemne.



## Holdeindretning til kasseformede emner

## S A M M E N D R A G

En holdeindretning til kasseformede emner, såsom CD-plader i foderaler, omfatter et øvre, langstrakt holde-  
5 organ med et gummielastisk afsnit og et stop for emnerne, og et nedre, langstrakt bæreorgan med en vandret bæreflade og et stop for emnerne.

Holdeorganet har fortrinsvis en mod emnerne vendende løbe.

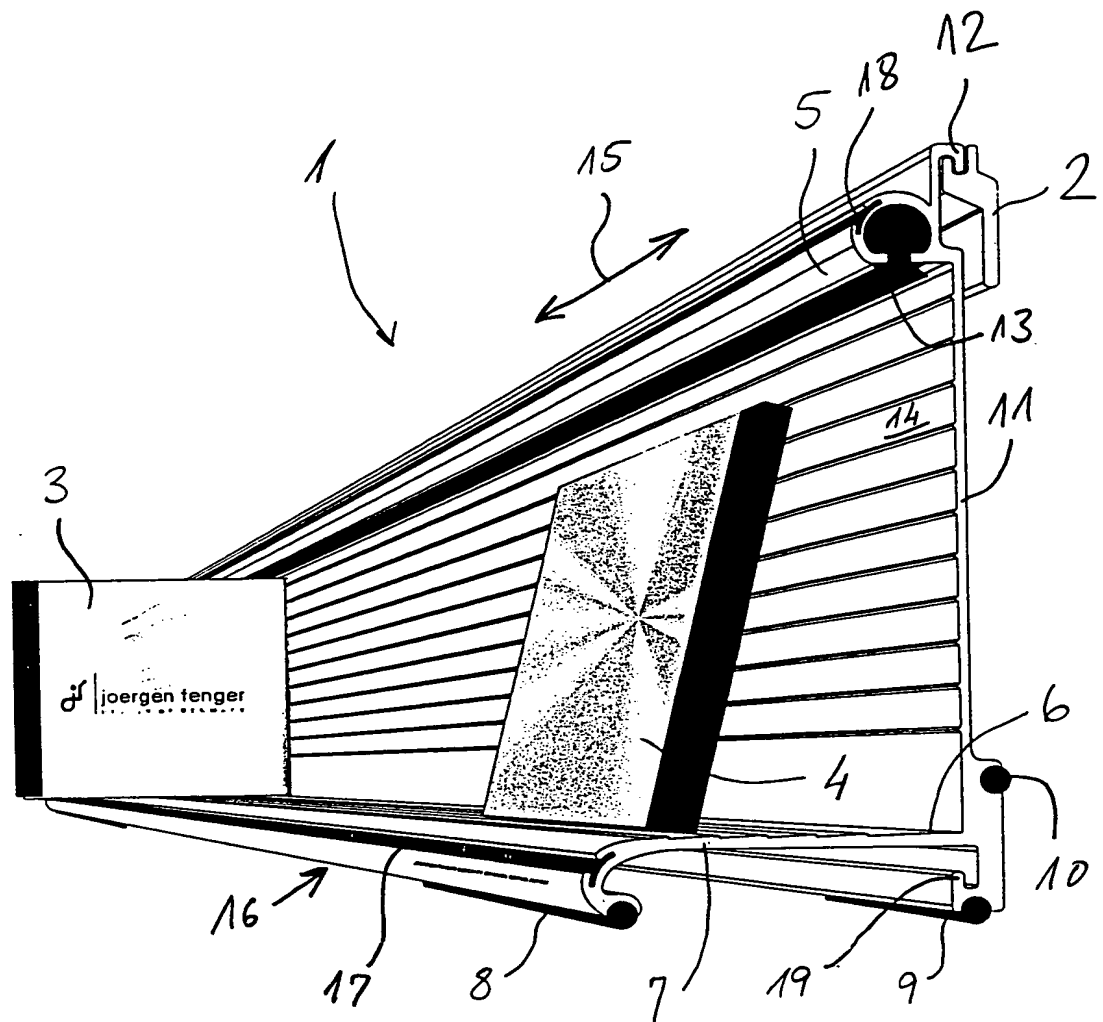
10 Holdeindretningen kan foruden have en hylde, fortrinsvis med savtakformede trin.

Holdeorganet og bæreorganet er fortrinsvis forbundet med en væg.

15 Holdeindretning har fortrinsvis ophængningsorganer til ophængning på en væg, og fortrinsvis støtteorganer til at støtte mod væggen. Støtteorganerne er fortrinsvis indstillelige i længden ved afkortning.

20 Holdeindretning har fortrinsvis fødder til at støtte på en bordplade, og dens bærende konstruktion udgøres fortrinsvis af et ekstruderet metalemne.

(Fig. 1).1



*Fig. 1*

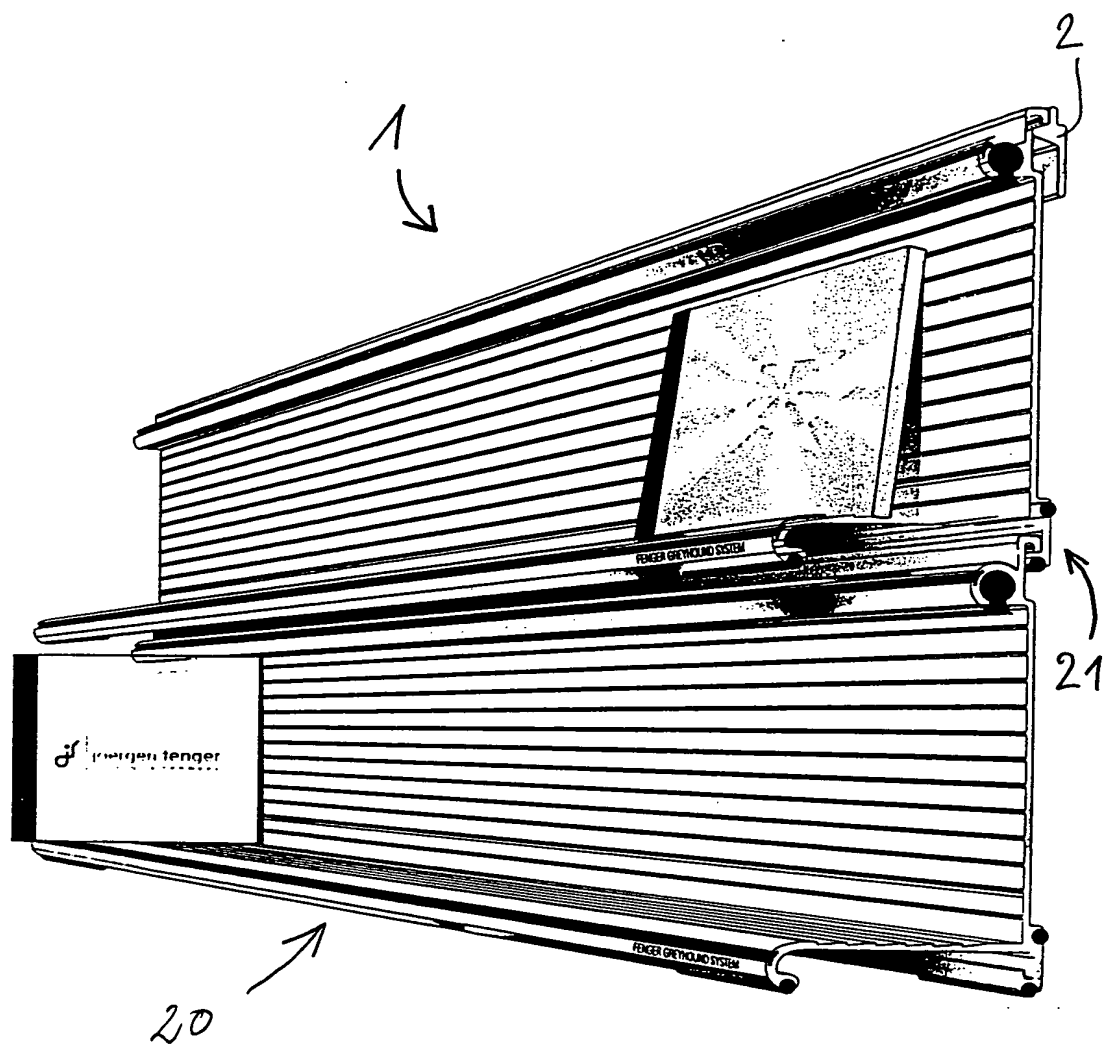
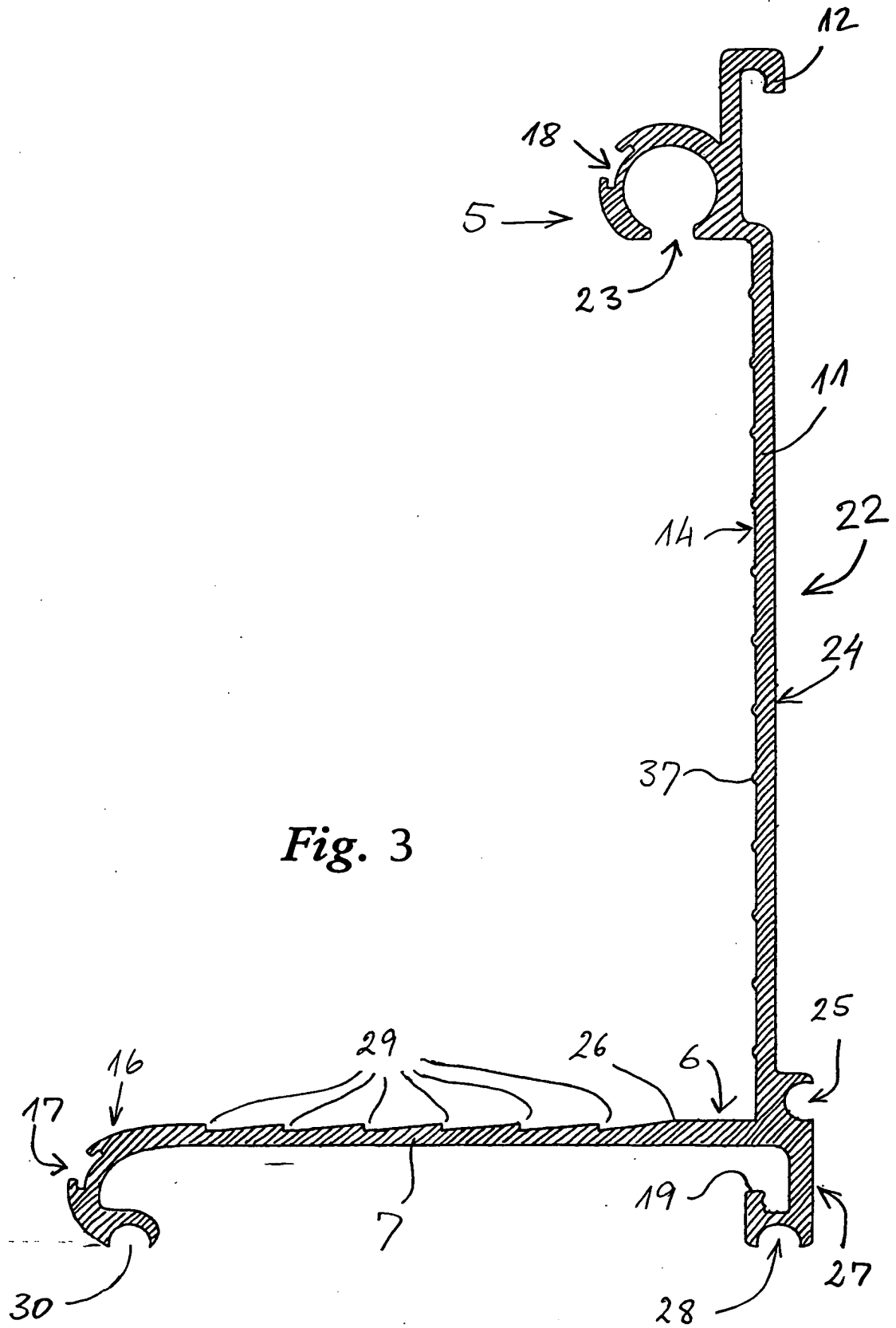
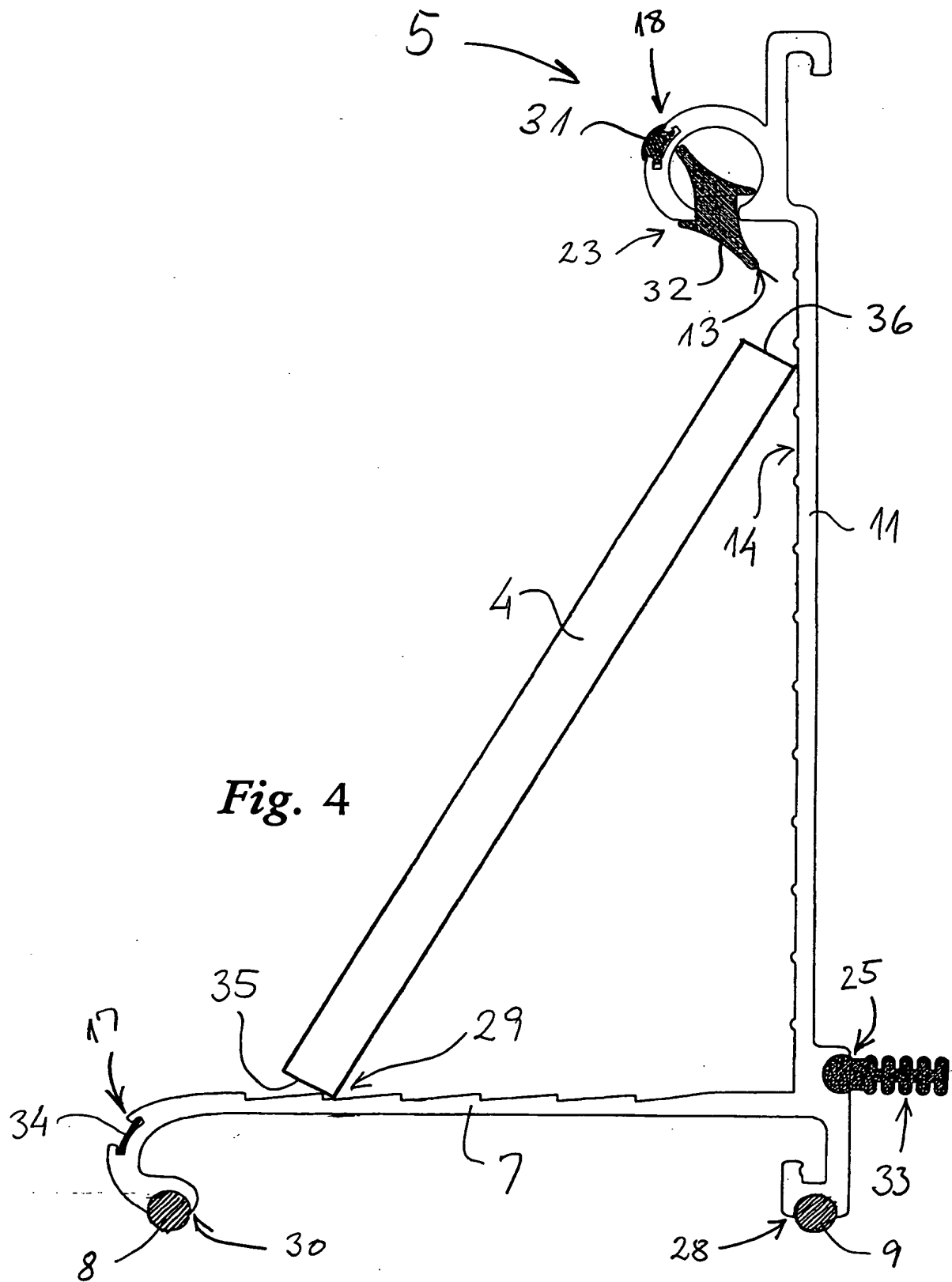
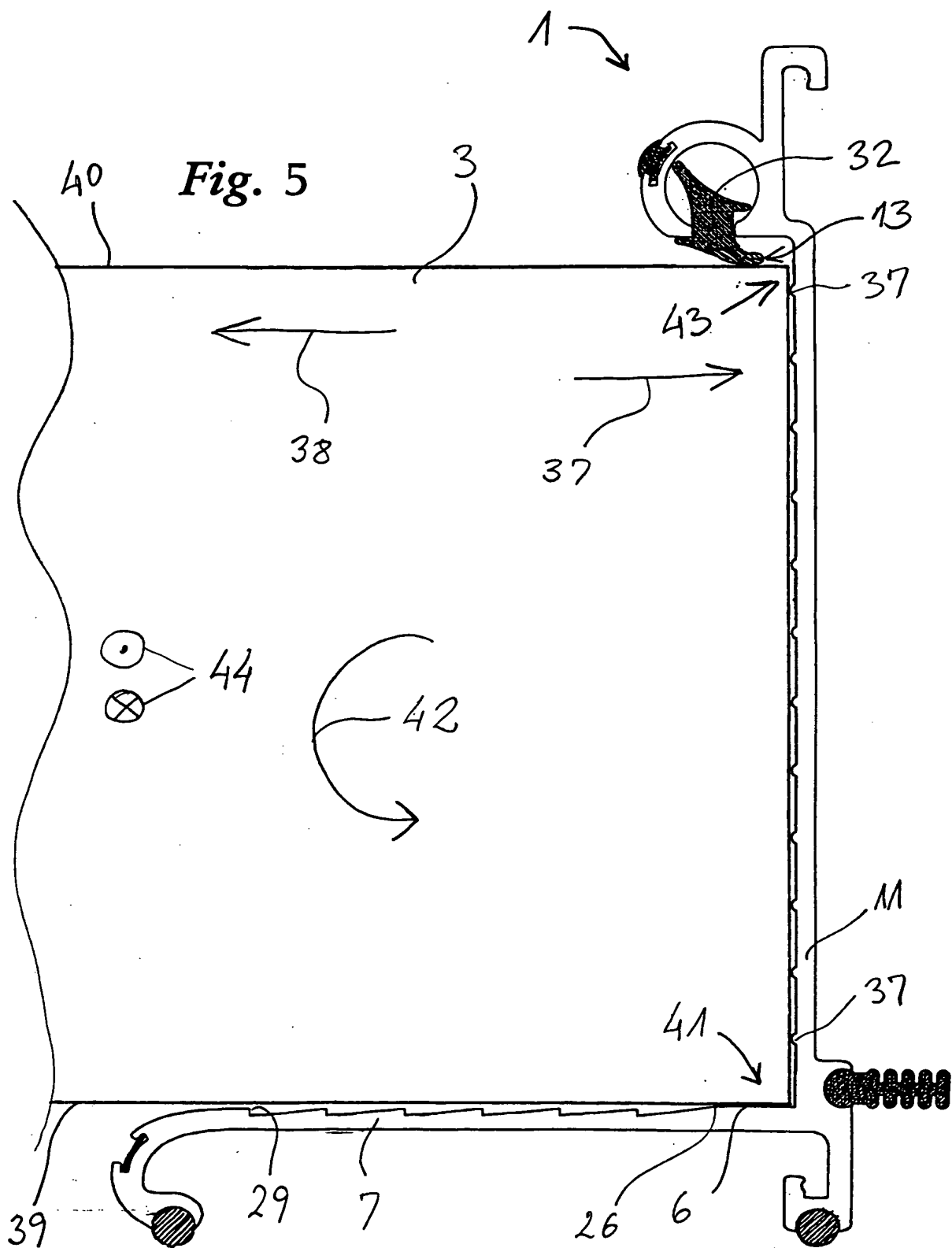
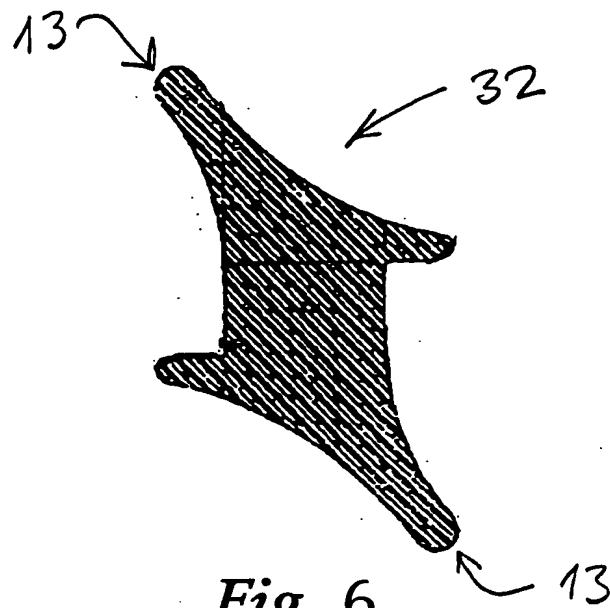
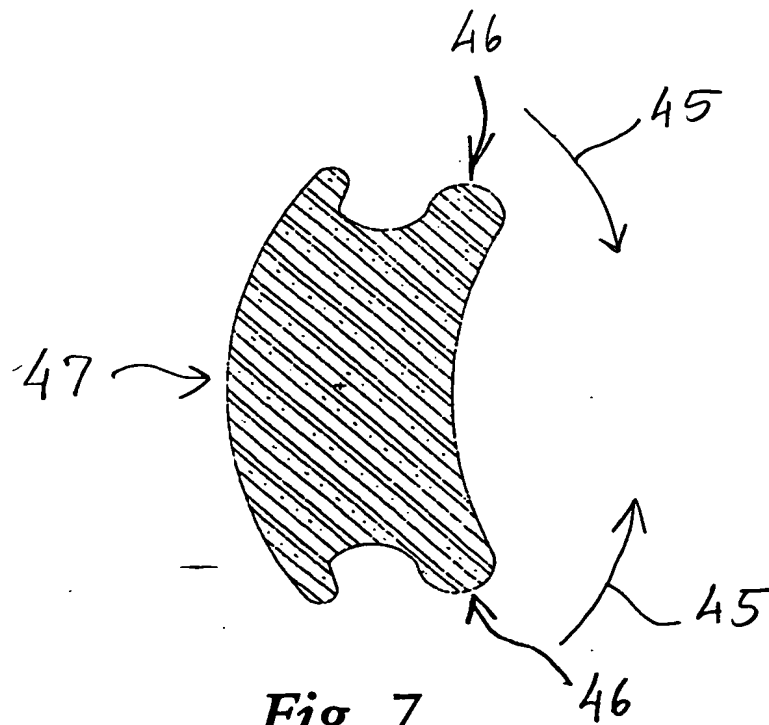


Fig. 2







*Fig. 6**Fig. 7*

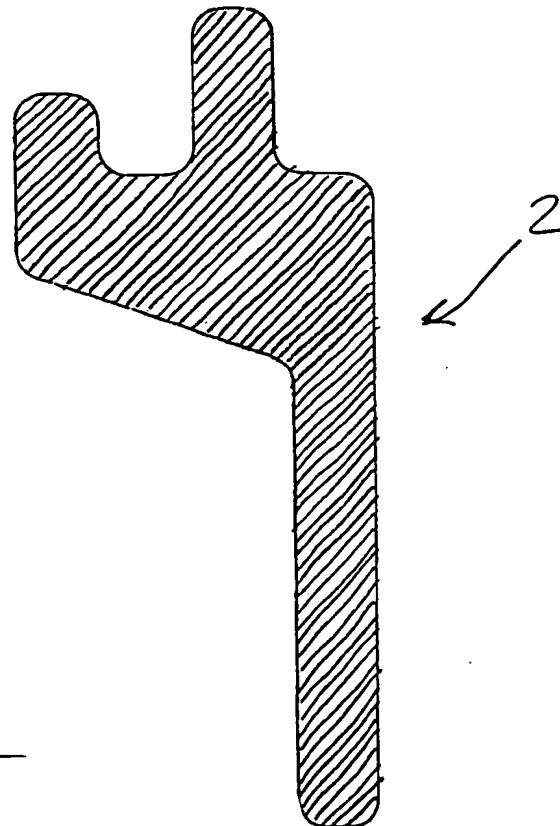
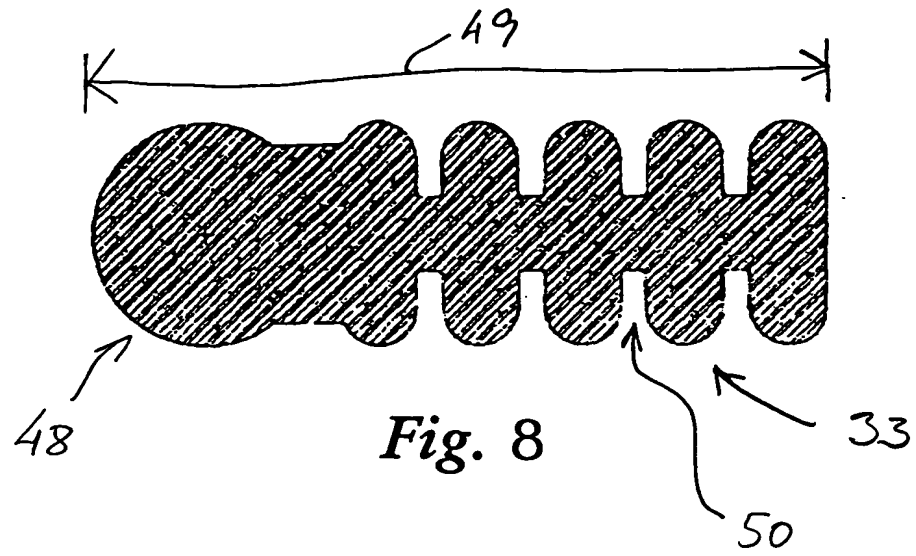
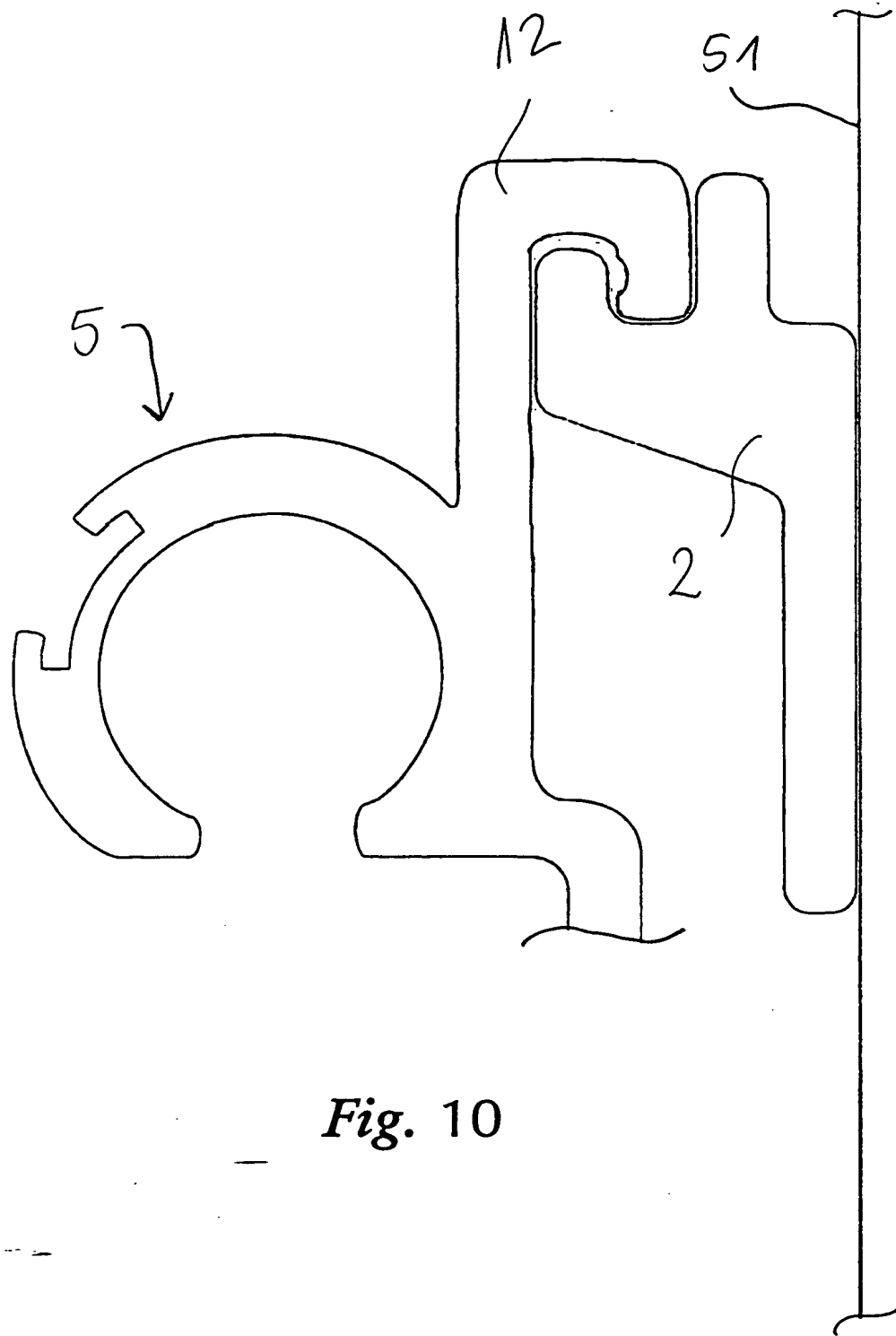
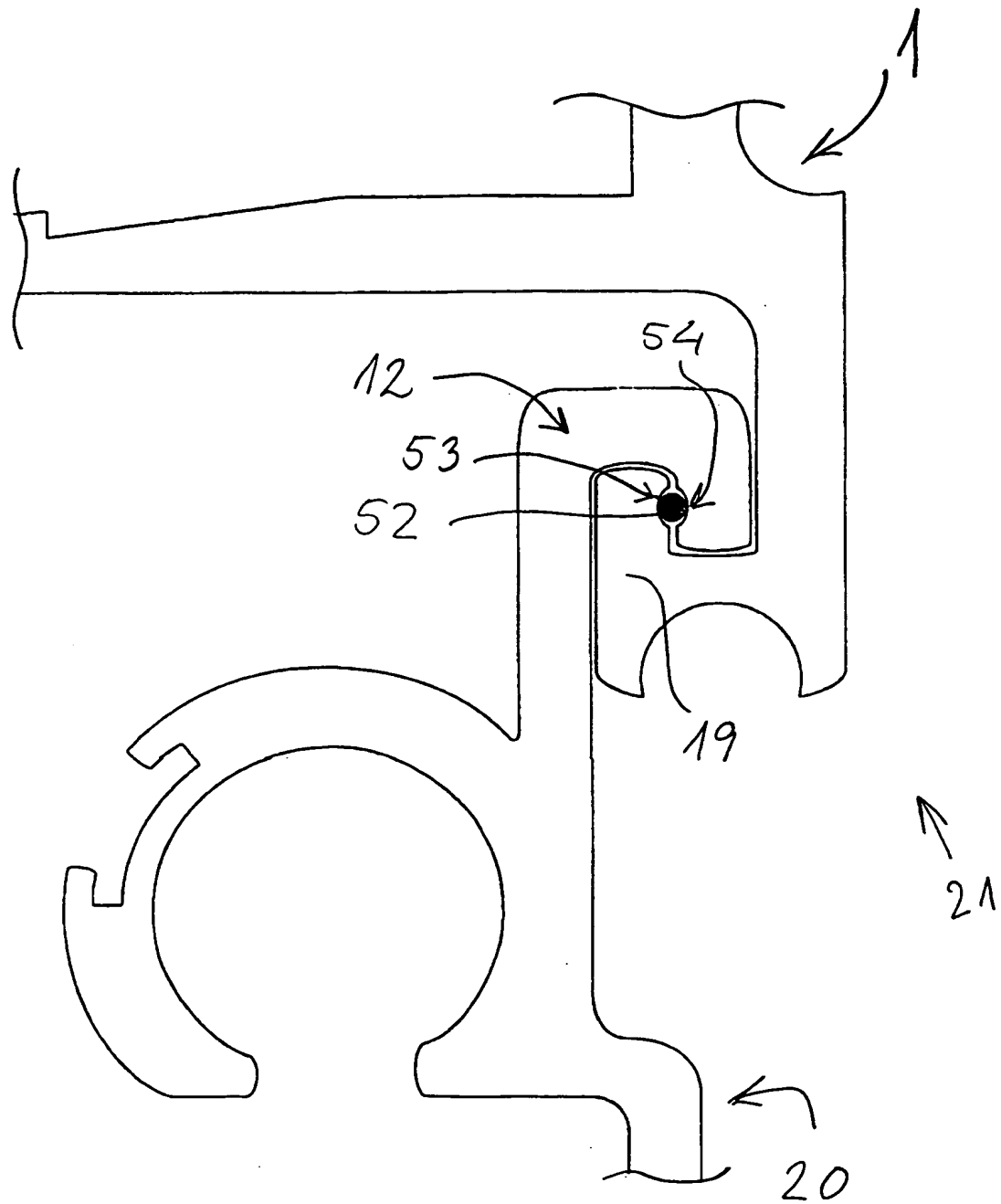


Fig. 9





*Fig. 10*



**Fig. 11**

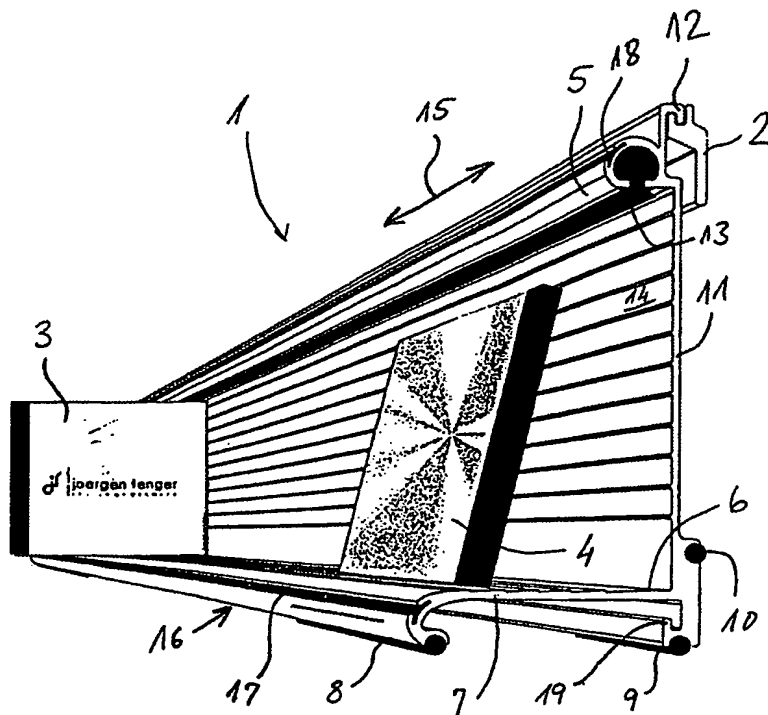


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>A47F 7/00, 7/14, A47B 81/06 // G11B 33/04</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/27254</b> <b>(43) International Publication Date:</b> 18 May 2000 (18.05.00)
<b>(21) International Application Number:</b> PCT/DK99/00587 <b>(22) International Filing Date:</b> 28 October 1999 (28.10.99) <b>(30) Priority Data:</b> BA 1998 00404 28 October 1998 (28.10.98) DK <b>(71) Applicant (for all designated States except US):</b> JOERGEN FENGER APS [DK/DK]; Ejby Industrivej 82, DK-2600 Glostrup (DK). <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> FENGER, Jørgen, Holberg [DK/DK]; Avnøvej 30, Svinø, DK-4750 Lundby (DK). <b>(74) Agents:</b> BERING, Jesper et al.; Internationalt Patent-Bureau, Høje Taastrup Boulevard 23, DK-2630 Taastrup (DK).		<b>(81) Designated States:</b> AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>In English translation (filed in Danish).</i>

**(54) Title:** A CARRYING DEVICE FOR BOX-SHAPED ITEMS**(57) Abstract**

A carrying device for box-shaped items, such as compact discs in covers, comprises an upper, elongate retaining means with a rubber-elastic portion and a stop for the items, and a lower, elongate carrying means with a horizontal supporting face and a stop for the items. The retaining means has preferably a lip facing the items. The carrying device may below have a shelf, preferably with saw-tooth shaped steps. The retaining means and the carrying means are preferably connected by a wall. The carrying device has preferably suspension means for suspension on a wall, and preferably supporting means for support against the wall. The supporting means are preferably lengthwise adjustable by shortening. The carrying device has preferably feet for resting on a table top, and its supporting structure is preferably constituted by an extruded metal blank.



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## A CARRYING DEVICE FOR BOX-SHAPED ITEMS

The present invention relates to a carrying device for a number of flat, box-shaped items, such as cassettes, tiles, covers or the like. The items are typically tall, broad and thin. The invention is in particular appropriate for storage and display of compact discs in covers mutually arranged in the same way as books in bookshelves.

10 Compact discs are mostly used for storage of digital musical recordings and computer programs. Carrying devices for compact discs in covers are generally known in exceedingly many variants. They also exist for digital video discs and MiniDisc-records  
15 (compact discs in a small size). All these types of records are generally stored in plastic covers (cassettes) of quite the same structure. The covers have retaining means for the record or records and inner retaining means for insertion labels or folders.

20 For the sake of simplicity, all these three types of records in their covers are below designated "CDs", and the expressions "CD, the CD, CDs and the CDs" are to be understood as any of the above stated kinds of items.

25 A carrying device of the stated kind designed by the designer group TOOLS and produced and marketed by the company Tommy Larsen, Silkeborg, Denmark, has the form of an extruded (and thus prismatic) item which in a horizontal direction is elongate and has an almost C-  
30 shaped cross section. The two terminal points of the C-shaped cross section hereby form rectilinear, horizontally extending jaws provided with rubber edges facing each other. The item is intended to be fastened on a wall with the two jaws turning away from the wall and  
35 facing the room.

The distance between the two jaws is thus adapted that a CD just fits tightly in between the rubber edges of the jaws, when set on edge with its back facing the room. The bottom jaw projects somewhat longer out in the room than the top jaw, whereby the CD is retained in a secure way even though it is loaded downwards by the gravitational force or possible impacts.

However, this carrying device has the drawback that the CD is retained relatively tightly between the jaws. This makes it unnecessarily difficult to insert and remove CDs, and as their exterior (the cover itself) is produced from a rather fragile type of plastic, they break easily when inserted in or removed from the known carrying device.

A further inconvenience of the known carrying device is that the CD does not have a well-defined orientation in the rotating direction around a horizontal axis parallel to the wall on which the carrying device is arranged. No well-defined stops being provided for the rear edge of the CD and at the same time, the CD moves stiffly at insertion, it is difficult for the users to reach a well-defined position for each individual CD, and as consequence, they are not aligned with each other when they are placed in the carrying device.

Finally, it is a disadvantage of the known carrying device that when removing the CD from the carrying device, the CD can only be seized by the two corners facing the room.

Another carrying device of the initially stated kind and designed by Frank Nielsen is known from a catalogue "Living Design - Music is the Dream Language of the World" from the company LIVING DESIGN of AM Denmark A/S, Kokkedal, Denmark (page 23).

This carrying device consists of an extruded rail mounted horizontally on a wall or the like. The rail has near its top edge two narrowly spaced, elongate horizontal jaws of which the top jaw is drawn backwards against the wall and the bottom jaw projects into the room.

Between these two jaws, an inner end of an arm or cantilever can be arranged and in its rest position project horizontally into the room and furthermore swing in a horizontal plane and thus be left in any desired angle with the wall, in the horizontal plane.

The CDs are arranged each hanging down from one of these arms by hooks on the underside of the arm being engaged with recesses provided on the upper edge of cover of the CD in connection with the retaining means for the insertion labels or folder.

Thus, the CDs may swing sideways forwards and backwards in the way a reader may "leaf" through a book. It is easy to watch the fronts of the CDs in order to choose one to be played or entered into a computer.

The CDs with attached arms may probably be detached from the wall rail when they are to be played. If the CDs are transported, it is, however, usually necessary to demount the arms.

It is a drawback of this carrying device that the CDs are not particularly close in the sideways direction. It is obviously necessary with a considerably mutual horizontal distance between the CDs for them to be able to swing sufficiently widely. The carrying device has thus a considerably reduced storage capacity per occupied cubic unit in relation to carrying devices where the CDs are stored closely.

Furthermore, it is a considerable inconvenience of this carrying device that the hooks of the arms are

fragile because of their required cooperation with the standard recesses in the CD, and that the covers of the CDs as stated are produced from a very fragile material.

5       The object of the invention is to provide a carrying device of the initially stated kind which is free from the described disadvantages of the known carrying devices but which still permits a close storage of the CDs and permits to leaf through the CDs  
10 as in a book.

According to the invention, this object is achieved in that the carrying means has a relatively smooth and plane, essentially horizontal, upper supporting face, and adjacent to and behind the supporting  
15 face a stop for the items, elongate in the crosswise direction, and that the retaining means on its underside has a rubber-elastic portion, and a stop for the items, placed behind this portion and elongate in the crosswise direction.

20       The plane and smooth supporting face permits the CDs to swing around an essentially vertical axis even though their weight essentially rests on the supporting face. Furthermore, the insertion and removal is essentially facilitated as the lower, inner corner of the CD  
25 may slide in place even after the rubber-elastic portion of the retaining means has obtained a braking engagement with the upper inner corner of the CD.

The stop of the supporting means behind the supporting face permits a secure fastening of the CD in  
30 its inserted position. As the CD is mainly retained by its two inner corners (which are in front in the insertion direction), the gravity will make it swing around a horizontal axis in the crosswise direction of the carrying device; this corresponds to an inward  
35 force acting at the lower stop adjacent to the support-



ing device, and this force is absorbed by the stop. At the same time it is assured that all the CDs are aligned to each other, whereby a favourable visual impression is obtained.

5 In preferred embodiments, the supporting means and the retaining means extend relatively shortly from the front of the carrying device, in particular preferably about 10 and 5 mm, respectively.

Thus, the said leafing in the CDs is facilitated,  
10 as the axis of rotation in the swinging leafing movement will be correspondingly close to the rear edge of the CD. This provides the user with an extremely convenient access to watch the fronts of the CDs where the most relevant and most easily recognisable information is most frequently placed.  
15

It is preferred that the rubber-elastic portion of the retaining means comprises an edge or lip facing the items and that the lip then points in the direction towards the stop of the retaining means, i.e. towards  
20 the front of the carrying device.

By an edge or lip engaging the upper edge of the CD, a reduced insertion force and a better retaining are obtained due to the resiliency of the edge or lip. This resiliency gives per se a lesser resistance when  
25 inserting the CD in the carrying device. During the fastening in the carrying device, the resiliency of the edge or lip means that the rubber-elastic edge abutting against the upper edge of CD is deformed instead of slipping when the CD is subjected to stress for removal.  
30 al. The rubber edge thus maintains a better "grip" in the upper edge of CD.

In a particularly preferred embodiment, the lip is directed towards the stop of the carrying device. Thus, the lip has a barb effect retaining the CD even better.

Besides, tests have shown that such an inward lip surprisingly improves its grip in the upper edge of the CD each time the CD swings forwards and backwards in the leafing movement. This is presumably because the lip has two independent grips in the two side corner edges of the upper edges which both have a small, upwards directed bead. In this way the grip of lip in the bead which is moving outwards in the swing movement can force the opposite bead further inwards under the lip as a consequence of the swing movement. Thus, it is in a very effective way prevented that the swing movement loosens the CDs from the carrying device when leafing through the CDs.

It is a further object of the invention to provide a display and/or disposal place for the CDs so that the carrying device may be used for display of CDs at the dealers, in libraries or the like, and be used for disposal of the cover while the CD is played or entered.

According to the invention, this object is obtained in that the carrying device is provided with a shelf below on the front of the carrying device. The CD can thus be placed on the shelf, leaning against the front.

In a preferred embodiment, the shelf has steps or beads extending in its crosswise direction. These are preferably saw-tooth shaped with a low, steep or essentially vertical edge facing the stop of the carrying means.

It is thus obtained that a CD placed on the shelf and leaning against the front of the carrying device cannot slip on the shelf and thus fall down.

It is preferred that the supporting face is placed higher than the shelf. The CDs are thus prevented from touching the shelf during the swing movement which would tend towards shifting their axis of rotation

outwards, away from the front of the carrying device. In this connection it is preferred that the peaks of the serration are placed in a horizontal plane situated 0.2-1 mm, preferably about 0.5 mm below the plane of the supporting face.

It is preferred that the retaining means and carrying means are connected to an essentially vertical wall which preferably constitutes the two stops. This results in a simple and thus less expensive structure of the carrying device.

The retaining means and/or carrying means can on their fronts have holders such as open canals to hold signs, labels or the like.

It is thus obtained that e.g. an alphabetical grouping of the CDs does not occupy sideways place between the CDs. These may thus be arranged sideways close and still be grouped in a systematic way.

According to the invention, the carrying device preferably has suspension means which can engage with fittings to be fastened on a wall.

A further object of the invention is to permit the carrying device to be suspended very precisely plumb in a simple way.

According to the invention, this object is achieved in that the carrying device below on the rear side has supporting means for support against a wall on which the carrying device is suspended, which supporting means can preferably be adjusted in their length.

Preferably, the supporting means have the form of pieces from an extruded rubber item which have longitudinal weakenings in the crosswise direction to permit a crosscutting of the supporting means, if desired.

Finally, it is an object of the invention to permit a number of carrying devices to be suspended in

an as simple way as one carrying device and in a secure way.

According to invention this object is obtained in that the carrying device has catching means to carry a  
5 below arranged carrying device of the same kind, preferably in cooperation with its suspensions means.

In a preferred embodiment, the catching means and suspension means on two interconnected carrying devices are meant to be locked together, preferably in that a  
10 stiff wire is inserted in a channel constituted by recesses in both catch and suspension means.

In that the carrying device is designed as being elongate in the crosswise direction with an essentially constant cross section, its supporting structure  
15 preferably being constituted by an extruded, elongate metal blank, an extremely simple, rational and low-cost production of the carrying device is obtained along with a pleasant appearance.

In the following, the invention will be explained  
20 in more detail by means of examples of embodiment and with reference to the drawings, in which

Fig. 1 shows a carrying device according to the invention, suspended on a wall fixture on a wall,

Fig. 2 shows two joined carrying devices according  
25 to the invention, suspended on a wall fixture on a wall,

Fig. 3 shows a cross section in an extruded metal blank for production of the carrying device in Fig. 1,

Fig. 4 shows the carrying device in Fig. 1, seen  
30 from the side, with a CD placed in an inclined position.

Fig. 5 shows the carrying device in Fig. 4 with a CD placed in the device,

Fig. 6 at an enlarged scale shows a rubber profile for the retaining means in the carrying device in Figs. 4-5,

Fig. 7 at an enlarged scale shows a rubber profile 5 for edging in the carrying device in Figs. 4-5,

Fig. 8 at an enlarged scale shows a rubber profile for a supporting means for the carrying device in Figs. 4-5.

Fig. 9 at an enlarged scale shows a cross section 10 in the wall fixture in Fig. 1,

Fig. 10 at an enlarged scale shows a detail drawing of the suspension of the carrying device in Fig. 1 on a wall fixture, and

Fig. 11 at an enlarged scale shows the inter-connection of the two carrying devices in Fig. 2.

Identical reference numbers are used for corresponding parts in all figures.

Fig. 1 shows a carrying device 1 according to the invention. The carrying device 1 has a body or a wall 11 forming a supporting chassis. In Fig. 1, the front 14 of the chassis 11 is visible. The carrying device 1 is elongate in its crosswise direction 15.

At the top of the chassis 11, there is provided a retaining means 5 in the form of a downwards open tube projecting forward and partly enveloping a rubber profile with a lip 13 projecting downwards and backwards.

On its front, the retaining means 5 has an undercut groove 18 in which a black ornamental strip of plastic is embedded, as shown in the embodiment in Fig. 1.

A little further up on the back of the chassis 11, an elongate hooked suspension means 12 is provided to engage with a wall fixture 2 fastened to a wall (not shown) in a room.

A carrying means in the form of a forward projecting slat 6 is provided below on the chassis 11. The slat 6 continues in a shelf 7 which curves downward in front at 16. The curve 16 of the shelf is terminated in a foot 8 which in the shown embodiment consists of an O-ring string embedded in a recess in the curved portion 16 of the shelf 7.

In front of the curved portion 16, a groove 17 corresponding to the groove 18 is also here provided with an ornamental strip.

The chassis 11 continues downwards to a similar foot 9 which is provided in the same way as the foot 8. Below on the back of the chassis 11, a similar embedded O-ring string 10 acts as a support means against the wall on which the carrying device is suspended.

In the carrying device 1, a CD 3 is pushed in between the retaining means 5 and the carrying means 6. The CD is suspended by its own weight without touching the shelf 7, and retained by the deformation in the rubber lip 13.

On the shelf 7, a CD 4 leans against the front of the chassis 11 with its face side facing forwards for display.

Fig. 2 shows two carrying devices 1, 20 of the same kind as in Fig. 1. The upper carrying device 1 is suspended on the wall fixture 2 as in Fig. 1, whereas the suspension means 12 of the lower carrying device 20 (cf. Fig. 1) at 21 engages with a catching means 19 on the upper carrying device 1 at the bottom of the front 14 of the chassis 11 (cf. Fig. 1)

Fig. 3 shows a cross section of an elongate extruded metal blank 22 for production of the carry-

11

ing devices in Figs. 1-2. Starting from the top, the following elements are shown in the cross section:

The hooked suspension means 12; the tubular retaining means 5 with the undercut groove 18 and an opening 23 to receive a rubber profile; the wall-shaped chassis 11 with the front 14 and a back 24; a number of beads 37 on the front 14 of the chassis 11 (cf. below); a slightly undercut, circular groove 25 to receive the supporting means 10; the carrying means 6 extending from the front 14 of the chassis 11 to a faint break 26 on the top side of the shelf; the lower extension 27 of the chassis 11 with a groove 28 corresponding to the groove 25 and to receive the foot 9; the shelf 7 which on its top side has a number (here: six) of saw-tooth shaped steps 29 for securing inclining CDs 4 (Fig. 1); the curved portion 16 of the shelf 7 with the undercut groove 17 and a groove 30, corresponding to the grooves 25, 28 and for receiving the foot 8.

The beads 37 have only ornamental purposes; they break the surface of the front 14 in a visually pleasant way and at the same time, they will quite effectively mask the unwanted, so-called drawing lines which almost always appear on extruded metal blanks.

In Fig. 5, the carrying device 1, 20 is seen from the side. According to the invention, Fig. 4 shows the different rubber and plastic parts belonging to the carrying device.

A plastic profile 31 is placed in the groove 18 (cf. Fig. 7). This profile 31 may e.g. be used as a decoration in the entire extent of the carrying device in the crosswise direction 15 (Fig. 1) or it may be delivered with the carrying device 1, 20 cut in short pieces with applied letters or numbers for division of the carrying device into portions for alphabetical or

numerical grouping of the CDs 3 in the carrying device 1, 20.

In the opening 23 in the retaining means 5, an elongate rubber profile 32 is inserted (cf. Fig. 6), 5 extending in the entire width of the carrying device in the crosswise direction 15 (Fig. 1). The profile 32 has a lip 13 facing backwards - i.e. towards the chassis 11 - the function of which will be explained below.

10 A supporting means is inserted in the groove 25 in an alternative embodiment 33 (instead of the embodiment 10 in Fig. 1 which is an O-ring string). The function of the supporting means in the embodiment 33 will be explained below.

15 In the grooves 28 and 30, there are inserted feet 9 and 8 in the form of pieces of an O-ring string, as shown in Figs. 1-2.

In the groove 17, a plastic ribbon 34 is inserted for decoration purposes as shown in Fig. 1.

20 As shown in Fig. 1, a CD 4 is placed on the shelf 7. The CD 4 rests with its lower edge 35 on the top side of the shelf, said edge engaging one of the saw-tooth shaped steps 29. The upper edge 36 of the CD 4 leans against the front 14 of the chassis 25 11.

As appears from Fig. 4, the steps 29 will catch the lower edge 35 of the CD 4, when the CD is placed on the shelf 7. Tests have shown that this prevents in a surprisingly effective way the CD from slipping on 30 the shelf 7 and thus from falling down, also when the CD is placed in a hurry or in a careless manner.

Fig. 5 illustrates the main function of the carrying device, i.e. to store the CDs closely as books in a bookcase.



A CD 3 is inserted in the carrying device 1 in the direction of insertion 37. The rubber lip 13 on the rubber profile 32 is thus deformed as appears from Fig. 5. Consequently, the lip 13 exerts a downward pressure on the upper edge 40 of the CD. This downward pressure will increase if the CD moves in the direction of removal 38, and reduce when the CD moves in the direction of insertion 37. This results from easily understandable geometrical facts. The lip 13 acts thus as a barb and because of its material properties, it has a high friction against the upper edge 40 of the CD.

The lower edge 39 of the CD rests with its bottom corner 41 against the carrying means 6 which as earlier stated only extends until the edge 26. The friction between the corner 41 of the CD and the carrying means is quite small as the materials will typically be hard plastic and anodised aluminium which as known has an extremely small mutual friction.

The gravity will try to turn the CD in the rotating direction 42 as the CD is only carried in its corners 41 and 43. However, since the CD 3 is retained with considerable friction in the corner 43 by the rubber lip 13, it is pressed inwardly towards the chassis 11 at the bottom. The corner 41 is thus stopped by the chassis 11 - or in the shown embodiment rather by the lower bead 37 - which then acts as a stop placed immediately adjacent to the carrying means 6. The corner 41 is thus fixed in a well-defined spot.

In the same way, the top corner 43 of the CD 3 is directed towards a stop when inserted, which stop is constituted by the chassis 11 or rather the upper bead 37. Also the top corner 43 is then fixed on a well-defined spot.

Consequently, the placement of the CD 3 in the carrying device 1 is very well-defined and therefore all the CDs in the carrying device will be aligned neatly; they will lined up exactly and give a pleasant 5 and proper impression.

When the CD swings sideways as a leaf in a book, i.e. that the front part of the CD (the portion farthest away from the chassis 11) is moved in the side direction 44 (Fig. 5), the upper edge 40 will rub 10 against the lip 13. However, this edge has a considerable width, as appears from Fig. 4 (the edge 36), and thus, the one side (corner edge) of the edge 40 will move a little outwards in the direction 38, and the other side (corner edge) of the edge 40 will move a 15 little inwards, in the direction 37.

Tests have surprisingly shown that the earlier stated barb effect by these movements is actually able to pull the CD further and further inwards towards the chassis 11, even though the CD at the swing movements 20 (44) should be drawn a little outwards in the direction 38. The lip thus has the effect that it prevents in an extremely efficient way the CDs in the carrying device 1 from falling out when being leafed through even if this is done more or less violently.

25 On the other hand, the resilience in the lip 13 enables the CD to be moved easily sideways in the crosswise direction 15 (Fig. 1) when other CDs are to be inserted in the succession or otherwise rearranged.

The said barb effect of the lip 13 does not 30 impede an easy removal of the CDs, as they can merely be swung in the opposite rotating direction of the direction 42, whereby the bottom corner can without difficulty be withdrawn from the carrying means 6 because of the mentioned low friction.

Fig. 6 shows the rubber profile 32 on a larger scale. In the shown embodiment, the profile is reversible, with two lips 13 so that it may be turned if one lip is worn.

5 Fig. 7 shows the plastic profile 31. It is formed of such an elastic material that it can easily be compressed in the directions 45, when its two lips 46 are inserted in the undercuts in the groove 18 (or the groove 17). On the front 47, letters, numbers or  
10 other information can be printed.

Fig. 8 shows the cross section of the supporting means 33. This has a circular bead 48 fitting into the groove 25. The dimension 49 of the support means can easily be modified without tools by tearing the  
15 means in one of the grooves 50, the groove thereby facilitating the tear. The distance of the lower parts of the chassis 11 from the wall of the room can thus be adjusted such that a carrying device can be suspended exactly in plumb, also on an uneven wall.

20 Fig. 9 shows the cross section of the wall fixture 2. In Fig. 10 is shown how the wall fixture 2 cooperates with the suspension means 12 when the carrying device is suspended on a wall 51.

Finally, Fig. 11 shows how the catching means 19  
25 on the upper carrying device 1 in Fig. 2 cooperates with the suspension means 12 on the lower carrying device 20 in Fig. 2.

According to the invention, the catching means 19 is provided with a groove 53, and the suspension means  
30 12 with a groove 54 such that a locking wire 52 may be inserted in the cavity elongate in the crosswise direction and defined by these two grooves. The two carrying devices are thus locked to each other very effectively such that the lower carrying device 20 is  
35 prevented from slipping and falling down.

Even though the description only mentions the use of the carrying device according to the invention for storage and display of CDs, there is nothing to prevent the invention from being used for other objects of the  
5 same flat box-shaped form. The only requirement is that the objects are equally large in one of their two largest dimensions, typically the height.

Such other objects can e.g. be packed goods in flat boxes, books or booklets tightly wrapped in  
10 plastic foil. The use for solid objects which are to be removed and put in place frequently such as serving trays is also possible.

## C L A I M S

1. A carrying device for a number of flat, box-shaped items, such as cassettes, tiles or covers, and in particular compact discs in covers, with the largest  
5 faces of these items arranged in vertical planes, which carrying device has a front for receiving the items, and a back, and comprises an upper retaining means elongate in the crosswise direction and a lower carrying means elongate in the crosswise direction, placed  
10 under the retaining means and extending in parallel and rigidly connected herewith, c h a r a c t e r - i s e d in:

- that the carrying means is provided with a relatively smooth and plane, essentially horizontal, upper  
15 supporting face and with a stop for the items, which stop is adjacent to and placed behind the supporting face and elongate in the crosswise direction; and
- that the retaining means on its underside has a rubber-elastic portion and a stop for the items, placed  
20 behind this portion and elongate in the crosswise direction.

2. A carrying device according to claim 1, c h a - r a c t e r i s e d in that the width of the carrying means out from the front of the carrying device,  
25 counting from the stop of the carrying means, is smaller than 20 mm, preferably 5-15 mm and particularly preferred about 10 mm.

3. A carrying device according to claim 1 or 2, c h a r a c t e r i s e d in that the width of the  
30 retaining means out from the front of the carrying device, from the stop of the carrying means to the rubber-elastic portion, is smaller than 15 mm, preferably smaller than 10 mm and particularly preferred about 5 mm.

4. A carrying device according to any of the preceding claims, characterised in that the rubber-elastic portion of the retaining means comprises an edge facing the items.

5 5. A carrying device according to any of the preceding claims 1-3, characterised in that the rubber-elastic portion of the retaining means comprises a lip facing the items.

6. A carrying device according to claim 5, characterised in that the lip points in direction toward the stop of the retaining means.

7. A carrying device according to any of the preceding claims, characterised in comprising a shelf arranged below on the front of the  
15 device.

8. A carrying device according to claim 7, characterised in that the shelf has steps extending in the crosswise direction.

9. A carrying device according to claim 8, characterised in that the steps are saw-tooth  
20 shaped with a low, steep or essentially vertical edge facing the stop of the carrying means.

10. A carrying device according to any of the preceding claims 7-9, characterised in  
25 that the supporting face is above the shelf.

11. A carrying device according to claim 10, characterised in that the peaks of the serration are situated in a horizontal plane which is 0.2-1 mm, preferably about 0.5 mm under the plane of  
30 the supporting face.

12. A carrying device according to any of the preceding claims, characterised in that the retaining means and carrying means are connected by an essentially vertical wall which preferably constitutes the two stops.  
35

13. A carrying device according to any of the preceding claims, characterised in that the retaining means and/or carrying means on their fronts have holders such as open channels to hold  
5 signs, labels or the like.

14. A carrying device according to any of the preceding claims, characterised in comprising suspension means for suspension of the device on a wall or the like.

10 15. A carrying device according to claim 14, characterised in being provided below on the back with supporting means for support against a wall on which the carrying device is suspended.

15 16. A carrying device according to claim 15, characterised in that the supporting means are lengthwise adjustable.

17. A carrying device according to claim 16, characterised in that the supporting means are constituted by pieces of an extruded rubber blank  
20 which is in the crosswise direction provided with longitudinal weakenings to permit a shortening, if desired.

18. A carrying device according to any of the preceding claims, characterised by  
25 comprising legs or feet for resting on an essentially horizontal support face such as a table top.

19. A carrying device according to any of the preceding claims 14-18, characterised by comprising catching means for carrying a below arranged  
30 carrying device of the same kind, preferably by cooperation with its suspension means.

20. A carrying device according to claim 19, characterised in that the catching means and suspension means on two interconnected carrying  
35 devices are meant for being locked together, preferably

in that a stiff wire is inserted in a channel constituted by recesses in both the catching means and the suspension means.

21. A carrying device according to any of the  
5 preceding claims, characterised in that the carrying device is of a form being elongate in the crosswise direction and having an essentially constant cross section.

22. A carrying device according to claim 21,  
10 characterised in that the supporting structure of the carrying device is constituted by an extruded, elongate metal blank.



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 99/00587

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A47F 7/00, A47F 7/14, A47B 81/06 // G11B 33/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A47F, A47B, G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 8807344 A1 (BARRY WRIGHT CORPORATION), 6 October 1988 (06.10.88), whole document --	1-7
A	US 4630732 A (SNYMAN), 23 December 1986 (23.12.86), fig. 7-8 and adherent text --	1-7
A	WO 9854688 A1 (CHECKMATE INTERNATIONAL PTY. LTD), 3 December 1998 (03.12.98), fig. 5,13 and adherent text --	8-22
A	CH 523049 A (ROGER MALAVASI), 14 July 1972 (14.07.72), whole document --	12-22

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

## \* Special categories of cited documents:

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Date of the actual completion of the international search

3 February 2000

Date of mailing of the international search report

16-02-2000

Name and mailing address of the ISA/

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 99/00587

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5474190 A (WON-KIM), 12 December 1995 (12.12.95), whole document  -- -----	1-22

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

02/12/99

International application No.  
PCT/DK 99/00587

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
WO	8807344	A1	06/10/88	US 4793665 A	27/12/88
US	4630732	A	23/12/86	NONE	
WO	9854688	A1	03/12/98	AU 7514598 A AU P0708297 D	30/12/98 00/00/00
CH	523049	A	14/07/72	NONE	
US	5474190	A	12/12/95	NONE	

**CORRECTED VERSION**

**(19) World Intellectual Property Organization  
International Bureau**



**(43) International Publication Date**  
**18 May 2000 (18.05.2000)**

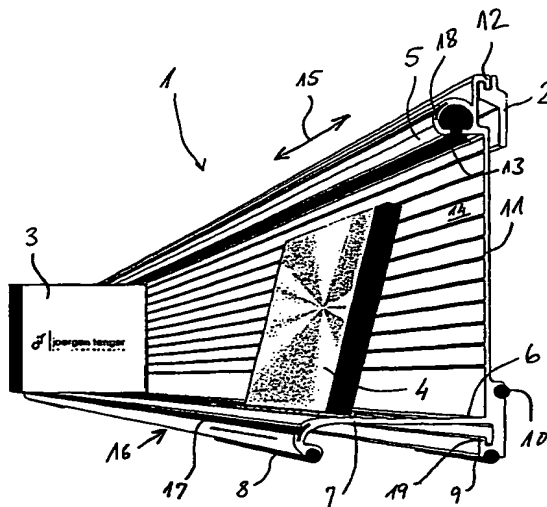
**PCT**

**(10) International Publication Number**  
**WO 00/27254 A1**

- |   |  |
|---|--|
| <b>(51) International Patent Classification<sup>7</sup>:</b> A47F 7/00, 7/14, A47B 81/06 // G11B 33/04                                      | <b>Holberg [DK/DK];</b> Avnøvej 30, Svinø, DK-4750 Lundby (DK).  |
| <b>(21) International Application Number:</b> PCT/DK99/00587  | <b>(74) Agents:</b> BERING, Jesper et al.; Internationalt Patent-Bureau, Høje Taastrup Boulevard 23, DK-2630 Taastrup (DK).  |
| <b>(22) International Filing Date:</b> 28 October 1999 (28.10.1999)   |  |
| <b>(25) Filing Language:</b> Danish   | <b>(81) Designated States (<i>national</i>):</b> AE, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW. |
| <b>(26) Publication Language:</b> English   |  |
| <b>(30) Priority Data:</b><br>BA 1998 00404      28 October 1998 (28.10.1998)      DK   | <b>(84) Designated States (<i>regional</i>):</b> ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,   |
| <b>(71) Applicant (<i>for all designated States except US</i>):</b> JOERGEN FENGER APS [DK/DK]; Ejby Industrivej 82, DK-2600 Glostrup (DK). |  |
| <b>(72) Inventor; and</b>   |  |
| <b>(75) Inventor/Applicant (<i>for US only</i>):</b> FENGER, Jørgen,  |  |

*[Continued on next page]*

- (54) Title:** A CARRYING DEVICE FOR BOX-SHAPED ITEMS



(57) **Abstract:** A carrying device for box-shaped items, such as compact discs in covers, comprises an upper, elongate retaining means with a rubber-elastic portion and a stop for the items, and a lower, elongate carrying means with a horizontal supporting face and a stop for the items. The retaining means has preferably a lip facing the items. The carrying device may below have a shelf, preferably with saw-tooth shaped steps. The retaining means and the carrying means are preferably connected by a wall. The carrying device has preferably suspension means for suspension on a wall, and preferably supporting means for support against the wall. The supporting means are preferably lengthwise adjustable by shortening. The carrying device has preferably feet for resting on a table top, and its supporting structure is preferably constituted by an extruded metal blank.

**WO 00/27254 A1**



MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

**(15) Information about Correction:**

see PCT Gazette No. 05/2001 of 1 February 2001, Section II

**Published:**

— *With international search report.*

**(48) Date of publication of this corrected version:**

1 February 2001

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## A CARRYING DEVICE FOR BOX-SHAPED ITEMS

The present invention relates to a carrying device for a number of flat, box-shaped items, such as cassettes, tiles, covers or the like. The items are typically tall, broad and thin. The invention is in particular appropriate for storage and display of compact discs in covers mutually arranged in the same way as books in bookshelves.

10 Compact discs are mostly used for storage of digital musical recordings and computer programs. Carrying devices for compact discs in covers are generally known in exceedingly many variants. They also exist for digital video discs and MiniDisc-records  
15 (compact discs in a small size). All these types of records are generally stored in plastic covers (cassettes) of quite the same structure. The covers have retaining means for the record or records and inner retaining means for insertion labels or folders.

20 For the sake of simplicity, all these three types of records in their covers are below designated "CDs", and the expressions "CD, the CD, CDs and the CDs" are to be understood as any of the above stated kinds of items.

25 A carrying device of the stated kind designed by the designer group TOOLS and produced and marketed by the company Tommy Larsen, Silkeborg, Denmark, has the form of an extruded (and thus prismatic) item which in a horizontal direction is elongate and has an almost C-  
30 shaped cross section. The two terminal points of the C-shaped cross section hereby form rectilinear, horizontally extending jaws provided with rubber edges facing each other. The item is intended to be fastened on a wall with the two jaws turning away from the wall and  
35 facing the room.

The distance between the two jaws is thus adapted that a CD just fits tightly in between the rubber edges of the jaws, when set on edge with its back facing the room. The bottom jaw projects somewhat longer out in the room than the top jaw, whereby the CD is retained in a secure way even though it is loaded downwards by the gravitational force or possible impacts.

However, this carrying device has the drawback that the CD is retained relatively tightly between the jaws. This makes it unnecessarily difficult to insert and remove CDs, and as their exterior (the cover itself) is produced from a rather fragile type of plastic, they break easily when inserted in or removed from the known carrying device.

A further inconvenience of the known carrying device is that the CD does not have a well-defined orientation in the rotating direction around a horizontal axis parallel to the wall on which the carrying device is arranged. No well-defined stops being provided for the rear edge of the CD and at the same time, the CD moves stiffly at insertion, it is difficult for the users to reach a well-defined position for each individual CD, and as consequence, they are not aligned with each other when they are placed in the carrying device.

Finally, it is a disadvantage of the known carrying device that when removing the CD from the carrying device, the CD can only be seized by the two corners facing the room.

Another carrying device of the initially stated kind and designed by Frank Nielsen is known from a catalogue "Living Design - Music is the Dream Language of the World" from the company LIVING DESIGN of AM Denmark A/S, Kokkedal, Denmark (page 23).

This carrying device consists of an extruded rail mounted horizontally on a wall or the like. The rail has near its top edge two narrowly spaced, elongate horizontal jaws of which the top jaw is drawn backwards  
5 against the wall and the bottom jaw projects into the room.

Between these two jaws, an inner end of an arm or cantilever can be arranged and in its rest position project horizontally into the room and furthermore  
10 swing in a horizontal plane and thus be left in any desired angle with the wall, in the horizontal plane.

The CDs are arranged each hanging down from one of these arms by hooks on the underside of the arm being engaged with recesses provided on the upper edge of  
15 cover of the CD in connection with the retaining means for the insertion labels or folder.

Thus, the CDs may swing sideways forwards and backwards in the way a reader may "leaf" through a book. It is easy to watch the fronts of the CDs in  
20 order to choose one to be played or entered into a computer.

The CDs with attached arms may probably be detached from the wall rail when they are to be played. If the CDs are transported, it is, however, usually  
25 necessary to demount the arms.

It is a drawback of this carrying device that the CDs are not particularly close in the sideways direction. It is obviously necessary with a considerably mutual horizontal distance between the CDs for them to  
30 be able to swing sufficiently widely. The carrying device has thus a considerably reduced storage capacity per occupied cubic unit in relation to carrying devices where the CDs are stored closely.

Furthermore, it is a considerable inconvenience of  
35 this carrying device that the hooks of the arms are



fragile because of their required cooperation with the standard recesses in the CD, and that the covers of the CDs as stated are produced from a very fragile material.

5       The object of the invention is to provide a carrying device of the initially stated kind which is free from the described disadvantages of the known carrying devices but which still permits a close storage of the CDs and permits to leaf through the CDs  
10 as in a book.

According to the invention, this object is achieved in that the carrying means has a relatively smooth and plane, essentially horizontal, upper supporting face, and adjacent to and behind the supporting  
15 face a stop for the items, elongate in the crosswise direction, and that the retaining means on its underside has a rubber-elastic portion, and a stop for the items, placed behind this portion and elongate in the crosswise direction.

20       The plane and smooth supporting face permits the CDs to swing around an essentially vertical axis even though their weight essentially rests on the supporting face. Furthermore, the insertion and removal is essentially facilitated as the lower, inner corner of the CD  
25 may slide in place even after the rubber-elastic portion of the retaining means has obtained a braking engagement with the upper inner corner of the CD.

The stop of the supporting means behind the supporting face permits a secure fastening of the CD in  
30 its inserted position. As the CD is mainly retained by its two inner corners (which are in front in the insertion direction), the gravity will make it swing around a horizontal axis in the crosswise direction of the carrying device; this corresponds to an inward  
35 force acting at the lower stop adjacent to the support-

ing device, and this force is absorbed by the stop. At the same time it is assured that all the CDs are aligned to each other, whereby a favourable visual impression is obtained.

- 5 In preferred embodiments, the supporting means and the retaining means extend relatively shortly from the front of the carrying device, in particular preferably about 10 and 5 mm, respectively.

Thus, the said leafing in the CDs is facilitated, 10 as the axis of rotation in the swinging leafing movement will be correspondingly close to the rear edge of the CD. This provides the user with an extremely convenient access to watch the fronts of the CDs where the most relevant and most easily recognisable information is most frequently placed. 15

It is preferred that the rubber-elastic portion of the retaining means comprises an edge or lip facing the items and that the lip then points in the direction towards the stop of the retaining means, i.e. towards 20 the front of the carrying device.

By an edge or lip engaging the upper edge of the CD, a reduced insertion force and a better retaining are obtained due to the resiliency of the edge or lip. This resiliency gives *per se* a lesser resistance when 25 inserting the CD in the carrying device. During the fastening in the carrying device, the resiliency of the edge or lip means that the rubber-elastic edge abutting against the upper edge of CD is deformed instead of slipping when the CD is subjected to stress for removal. 30 The rubber edge thus maintains a better "grip" in the upper edge of CD.

In a particularly preferred embodiment, the lip is directed towards the stop of the carrying device. Thus, the lip has a barb effect retaining the CD even better.

Besides, tests have shown that such an inward lip surprisingly improves its grip in the upper edge of the CD each time the CD swings forwards and backwards in the leafing movement. This is presumably because the lip has two independent grips in the two side corner edges of the upper edges which both have a small, upwards directed bead. In this way the grip of lip in the bead which is moving outwards in the swing movement can force the opposite bead further inwards under the lip as a consequence of the swing movement. Thus, it is in a very effective way prevented that the swing movement loosens the CDs from the carrying device when leafing through the CDs.

It is a further object of the invention to provide a display and/or disposal place for the CDs so that the carrying device may be used for display of CDs at the dealers, in libraries or the like, and be used for disposal of the cover while the CD is played or entered.

According to the invention, this object is obtained in that the carrying device is provided with a shelf below on the front of the carrying device. The CD can thus be placed on the shelf, leaning against the front.

In a preferred embodiment, the shelf has steps or beads extending in its crosswise direction. These are preferably saw-tooth shaped with a low, steep or essentially vertical edge facing the stop of the carrying means.

It is thus obtained that a CD placed on the shelf and leaning against the front of the carrying device cannot slip on the shelf and thus fall down.

It is preferred that the supporting face is placed higher than the shelf. The CDs are thus prevented from touching the shelf during the swing movement which would tend towards shifting their axis of rotation

outwards, away from the front of the carrying device. In this connection it is preferred that the peaks of the serration are placed in a horizontal plane situated 0.2-1 mm, preferably about 0.5 mm below the plane of  
5 the supporting face.

It is preferred that the retaining means and carrying means are connected to an essentially vertical wall which preferably constitutes the two stops. This results in a simple and thus less expensive structure  
10 of the carrying device.

The retaining means and/or carrying means can on their fronts have holders such as open canals to hold signs, labels or the like.

It is thus obtained that e.g. an alphabetical  
15 grouping of the CDs does not occupy sideways place between the CDs. These may thus be arranged sideways close and still be grouped in a systematic way.

According to the invention, the carrying device preferably has suspension means which can engage with  
20 fittings to be fastened on a wall.

A further object of the invention is to permit the carrying device to be suspended very precisely plumb in a simple way.

According to the invention, this object is  
25 achieved in that the carrying device below on the rear side has supporting means for support against a wall on which the carrying device is suspended, which supporting means can preferably be adjusted in their length.

Preferably, the supporting means have the form of  
30 pieces from an extruded rubber item which have longitudinal weakenings in the crosswise direction to permit a crosscutting of the supporting means, if desired.

Finally, it is an object of the invention to permit a number of carrying devices to be suspended in

an as simple way as one carrying device and in a secure way.

According to invention this object is obtained in that the carrying device has catching means to carry a  
5 below arranged carrying device of the same kind, preferably in cooperation with its suspensions means.

In a preferred embodiment, the catching means and suspension means on two interconnected carrying devices are meant to be locked together, preferably in that a  
10 stiff wire is inserted in a channel constituted by recesses in both catch and suspension means.

In that the carrying device is designed as being elongate in the crosswise direction with an essentially constant cross section, its supporting structure  
15 preferably being constituted by an extruded, elongate metal blank, an extremely simple, rational and low-cost production of the carrying device is obtained along with a pleasant appearance.

In the following, the invention will be explained  
20 in more detail by means of examples of embodiment and with reference to the drawings, in which

Fig. 1 shows a carrying device according to the invention, suspended on a wall fixture on a wall,

Fig. 2 shows two joined carrying devices according  
25 to the invention, suspended on a wall fixture on a wall,

Fig. 3 shows a cross section in an extruded metal blank for production of the carrying device in Fig. 1,

Fig. 4 shows the carrying device in Fig. 1, seen  
30 from the side, with a CD placed in an inclined position.

Fig. 5 shows the carrying device in Fig. 4 with a CD placed in the device,

Fig. 6 at an enlarged scale shows a rubber profile for the retaining means in the carrying device in Figs. 4-5;

Fig. 7 at an enlarged scale shows a rubber profile 5 for edging in the carrying device in Figs. 4-5,

Fig. 8 at an enlarged scale shows a rubber profile for a supporting means for the carrying device in Figs. 4-5.

Fig. 9 at an enlarged scale shows a cross section 10 in the wall fixture in Fig. 1,

Fig. 10 at an enlarged scale shows a detail drawing of the suspension of the carrying device in Fig. 1 on a wall fixture, and

Fig. 11 at an enlarged scale shows the inter-connection of the two carrying devices in Fig. 2.

Identical reference numbers are used for corresponding parts in all figures.

Fig. 1 shows a carrying device 1 according to the invention. The carrying device 1 has a body or a wall 11 forming a supporting chassis. In Fig. 1, the front 14 of the chassis 11 is visible. The carrying device 1 is elongate in its crosswise direction 15.

At the top of the chassis 11, there is provided a retaining means 5 in the form of a downwards open tube projecting forward and partly enveloping a rubber profile with a lip 13 projecting downwards and backwards.

On its front, the retaining means 5 has an undercut groove 18 in which a black ornamental strip 30 of plastic is embedded, as shown in the embodiment in Fig. 1.

A little further up on the back of the chassis 11, an elongate hooked suspension means 12 is provided to engage with a wall fixture 2 fastened to a wall 35 (not shown) in a room.

A carrying means in the form of a forward projecting slat 6 is provided below on the chassis 11. The slat 6 continues in a shelf 7 which curves downward in front at 16. The curve 16 of the shelf is terminated in a foot 8 which in the shown embodiment consists of an O-ring string embedded in a recess in the curved portion 16 of the shelf 7.

In front of the curved portion 16, a groove 17 corresponding to the groove 18 is also here provided with an ornamental strip.

The chassis 11 continues downwards to a similar foot 9 which is provided in the same way as the foot 8. Below on the back of the chassis 11, a similar embedded O-ring string 10 acts as a support means against the wall on which the carrying device is suspended.

In the carrying device 1, a CD 3 is pushed in between the retaining means 5 and the carrying means 6. The CD is suspended by its own weight without touching the shelf 7, and retained by the deformation in the rubber lip 13.

On the shelf 7, a CD 4 leans against the front 14 of the chassis 11 with its face side facing forwards for display.

Fig. 2 shows two carrying devices 1, 20 of the same kind as in Fig. 1. The upper carrying device 1 is suspended on the wall fixture 2 as in Fig. 1, whereas the suspension means 12 of the lower carrying device 20 (cf. Fig. 1) at 21 engages with a catching means 19 on the upper carrying device 1 at the bottom of the front 14 of the chassis 11 (cf. Fig. 1)

Fig. 3 shows a cross section of an elongate extruded metal blank 22 for production of the carry-

ing devices in Figs. 1-2. Starting from the top, the following elements are shown in the cross section:

The hooked suspension means 12; the tubular retaining means 5 with the undercut groove 18 and an opening 23 to receive a rubber profile; the wall-shaped chassis 11 with the front 14 and a back 24; a number of beads 37 on the front 14 of the chassis 11 (cf. below); a slightly undercut, circular groove 25 to receive the supporting means 10; the carrying means 6 extending from the front 14 of the chassis 11 to a faint break 26 on the top side of the shelf; the lower extension 27 of the chassis 11 with a groove 28 corresponding to the groove 25 and to receive the foot 9; the shelf 7 which on its top side has a number (here: six) of saw-tooth shaped steps 29 for securing inclining CDs 4 (Fig. 1); the curved portion 16 of the shelf 7 with the undercut groove 17 and a groove 30, corresponding to the grooves 25, 28 and for receiving the foot 8.

The beads 37 have only ornamental purposes; they break the surface of the front 14 in a visually pleasant way and at the same time, they will quite effectively mask the unwanted, so-called drawing lines which almost always appear on extruded metal blanks.

In Fig. 5, the carrying device 1, 20 is seen from the side. According to the invention, Fig. 4 shows the different rubber and plastic parts belonging to the carrying device.

A plastic profile 31 is placed in the groove 18 (cf. Fig. 7). This profile 31 may e.g. be used as a decoration in the entire extent of the carrying device in the crosswise direction 15 (Fig. 1) or it may be delivered with the carrying device 1, 20 cut in short pieces with applied letters or numbers for division of the carrying device into portions for alphabetical or



## 12

numerical grouping of the CDs 3 in the carrying device 1, 20.

In the opening 23 in the retaining means 5, an elongate rubber profile 32 is inserted (cf. Fig. 6),  
5 extending in the entire width of the carrying device in the crosswise direction 15 (Fig. 1). The profile 32 has a lip 13 facing backwards - i.e. towards the chassis 11 - the function of which will be explained below.

10 A supporting means is inserted in the groove 25 in an alternative embodiment 33 (instead of the embodiment 10 in Fig. 1 which is an O-ring string). The function of the supporting means in the embodiment 33 will be explained below.

15 In the grooves 28 and 30, there are inserted feet 9 and 8 in the form of pieces of an O-ring string, as shown in Figs. 1-2.

In the groove 17, a plastic ribbon 34 is inserted for decoration purposes as shown in Fig. 1.

20 As shown in Fig. 1, a CD 4 is placed on the shelf 7. The CD 4 rests with its lower edge 35 on the top side of the shelf, said edge engaging one of the saw-tooth shaped steps 29. The upper edge 36 of the CD 4 leans against the front 14 of the chassis  
25 11.

As appears from Fig. 4, the steps 29 will catch the lower edge 35 of the CD 4, when the CD is placed on the shelf 7. Tests have shown that this prevents in a surprisingly effective way the CD from slipping on  
30 the shelf 7 and thus from falling down, also when the CD is placed in a hurry or in a careless manner.

Fig. 5 illustrates the main function of the carrying device, i.e. to store the CDs closely as books in a bookcase.

A CD 3 is inserted in the carrying device 1 in the direction of insertion 37. The rubber lip 13 on the rubber profile 32 is thus deformed as appears from Fig. 5. Consequently, the lip 13 exerts a downward pressure on the upper edge 40 of the CD. This downward pressure will increase if the CD moves in the direction of removal 38, and reduce when the CD moves in the direction of insertion 37. This results from easily understandable geometrical facts. The lip 13 acts thus as a barb and because of its material properties, it has a high friction against the upper edge 40 of the CD.

The lower edge 39 of the CD rests with its bottom corner 41 against the carrying means 6 which as earlier stated only extends until the edge 26. The friction between the corner 41 of the CD and the carrying means is quite small as the materials will typically be hard plastic and anodised aluminium which as known has an extremely small mutual friction.

The gravity will try to turn the CD in the rotating direction 42 as the CD is only carried in its corners 41 and 43. However, since the CD 3 is retained with considerable friction in the corner 43 by the rubber lip 13, it is pressed inwardly towards the chassis 11 at the bottom. The corner 41 is thus stopped by the chassis 11 - or in the shown embodiment rather by the lower bead 37 - which then acts as a stop placed immediately adjacent to the carrying means 6. The corner 41 is thus fixed in a well-defined spot.

In the same way, the top corner 43 of the CD 3 is directed towards a stop when inserted, which stop is constituted by the chassis 11 or rather the upper bead 37. Also the top corner 43 is then fixed on a well-defined spot.

Consequently, the placement of the CD 3 in the carrying device 1 is very well-defined and therefore all the CDs in the carrying device will be aligned neatly; they will lined up exactly and give a pleasant 5 and proper impression.

When the CD swings sideways as a leaf in a book, i.e. that the front part of the CD (the portion farthest away from the chassis 11) is moved in the side direction 44 (Fig. 5), the upper edge 40 will rub 10 against the lip 13. However, this edge has a considerable width, as appears from Fig. 4 (the edge 36), and thus, the one side (corner edge) of the edge 40 will move a little outwards in the direction 38, and the other side (corner edge) of the edge 40 will move a 15 little inwards, in the direction 37.

Tests have surprisingly shown that the earlier stated barb effect by these movements is actually able to pull the CD further and further inwards towards the chassis 11, even though the CD at the swing movements 20 (44) should be drawn a little outwards in the direction 38. The lip thus has the effect that it prevents in an extremely efficient way the CDs in the carrying device 1 from falling out when being leafed through even if this is done more or less violently.

25 On the other hand, the resilience in the lip 13 enables the CD to be moved easily sideways in the crosswise direction 15 (Fig. 1) when other CDs are to be inserted in the succession or otherwise rearranged.

The said barb effect of the lip 13 does not 30 impede an easy removal of the CDs, as they can merely be swung in the opposite rotating direction of the direction 42, whereby the bottom corner can without difficulty be withdrawn from the carrying means 6 because of the mentioned low friction.

Fig. 6 shows the rubber profile 32 on a larger scale. In the shown embodiment, the profile is reversible, with two lips 13 so that it may be turned if one lip is worn.

5 Fig. 7 shows the plastic profile 31. It is formed of such an elastic material that it can easily be compressed in the directions 45, when its two lips 46 are inserted in the undercuts in the groove 18 (or the groove 17). On the front 47, letters, numbers or  
10 other information can be printed.

Fig. 8 shows the cross section of the supporting means 33. This has a circular bead 48 fitting into the groove 25. The dimension 49 of the support means can easily be modified without tools by tearing the  
15 means in one of the grooves 50, the groove thereby facilitating the tear. The distance of the lower parts of the chassis 11 from the wall of the room can thus be adjusted such that a carrying device can be suspended exactly in plumb, also on an uneven wall.

20 Fig. 9 shows the cross section of the wall fixture 2. In Fig. 10 is shown how the wall fixture 2 cooperates with the suspension means 12 when the carrying device is suspended on a wall 51.

Finally, Fig. 11 shows how the catching means 19  
25 on the upper carrying device 1 in Fig. 2 cooperates with the suspension means 12 on the lower carrying device 20 in Fig. 2.

According to the invention, the catching means 19 is provided with a groove 53, and the suspension means  
30 12 with a groove 54 such that a locking wire 52 may be inserted in the cavity elongate in the crosswise direction and defined by these two grooves. The two carrying devices are thus locked to each other very effectively such that the lower carrying device 20 is  
35 prevented from slipping and falling down.

Even though the description only mentions the use of the carrying device according to the invention for storage and display of CDs, there is nothing to prevent the invention from being used for other objects of the same flat box-shaped form. The only requirement is that the objects are equally large in one of their two largest dimensions, typically the height.

Such other objects can e.g. be packed goods in flat boxes, books or booklets tightly wrapped in plastic foil. The use for solid objects which are to be removed and put in place frequently such as serving trays is also possible.

## C L A I M S

1. A carrying device for a number of flat, box-shaped items, such as cassettes, tiles or covers, and in particular compact discs in covers, with the largest  
5 faces of these items arranged in vertical planes, which carrying device has a front for receiving the items, and a back, and comprises an upper retaining means elongate in the crosswise direction and a lower carrying means elongate in the crosswise direction, placed  
10 under the retaining means and extending in parallel and rigidly connected herewith, c h a r a c t e r - i s e d in:

- that the carrying means is provided with a relatively smooth and plane, essentially horizontal, upper  
15 supporting face and with a stop for the items, which stop is adjacent to and placed behind the supporting face and elongate in the crosswise direction; and
- that the retaining means on its underside has a rubber-elastic portion and a stop for the items, placed  
20 behind this portion and elongate in the crosswise direction.

2. A carrying device according to claim 1, c h a - r a c t e r i s e d in that the width of the carrying means out from the front of the carrying device,  
25 counting from the stop of the carrying means, is smaller than 20 mm, preferably 5-15 mm and particularly preferred about 10 mm.

3. A carrying device according to claim 1 or 2, c h a r a c t e r i s e d in that the width of the  
30 retaining means out from the front of the carrying device, from the stop of the carrying means to the rubber-elastic portion, is smaller than 15 mm, preferably smaller than 10 mm and particularly preferred about 5 mm.

4. A carrying device according to any of the preceding claims, characterised in that the rubber-elastic portion of the retaining means comprises an edge facing the items.

5 5. A carrying device according to any of the preceding claims 1-3, characterised in that the rubber-elastic portion of the retaining means comprises a lip facing the items.

6. A carrying device according to claim 5, characterised in that the lip points in direction toward the stop of the retaining means.

7. A carrying device according to any of the preceding claims, characterised in comprising a shelf arranged below on the front of the  
15 device.

8. A carrying device according to claim 7, characterised in that the shelf has steps extending in the crosswise direction.

9. A carrying device according to claim 8, characterised in that the steps are saw-tooth  
20 shaped with a low, steep or essentially vertical edge facing the stop of the carrying means.

10. A carrying device according to any of the preceding claims 7-9, characterised in  
25 that the supporting face is above the shelf.

11. A carrying device according to claim 10, characterised in that the peaks of the serration are situated in a horizontal plane which is 0.2-1 mm, preferably about 0.5 mm under the plane of  
30 the supporting face.

12. A carrying device according to any of the preceding claims, characterised in that the retaining means and carrying means are connected by an essentially vertical wall which preferably constitutes the two stops.  
35

13. A carrying device according to any of the preceding claims, characterised in that the retaining means and/or carrying means on their fronts have holders such as open channels to hold 5 signs, labels or the like.

14. A carrying device according to any of the preceding claims, characterised in comprising suspension means for suspension of the device on a wall or the like.

10 15. A carrying device according to claim 14, characterised in being provided below on the back with supporting means for support against a wall on which the carrying device is suspended.

15 16. A carrying device according to claim 15, characterised in that the supporting means are lengthwise adjustable.

17. A carrying device according to claim 16, characterised in that the supporting means are constituted by pieces of an extruded rubber blank 20 which is in the crosswise direction provided with longitudinal weakenings to permit a shortening, if desired.

18. A carrying device according to any of the preceding claims, characterised by 25 comprising legs or feet for resting on an essentially horizontal support face such as a table top.

19. A carrying device according to any of the preceding claims 14-18, characterised by comprising catching means for carrying a below arranged 30 carrying device of the same kind, preferably by cooperation with its suspension means.

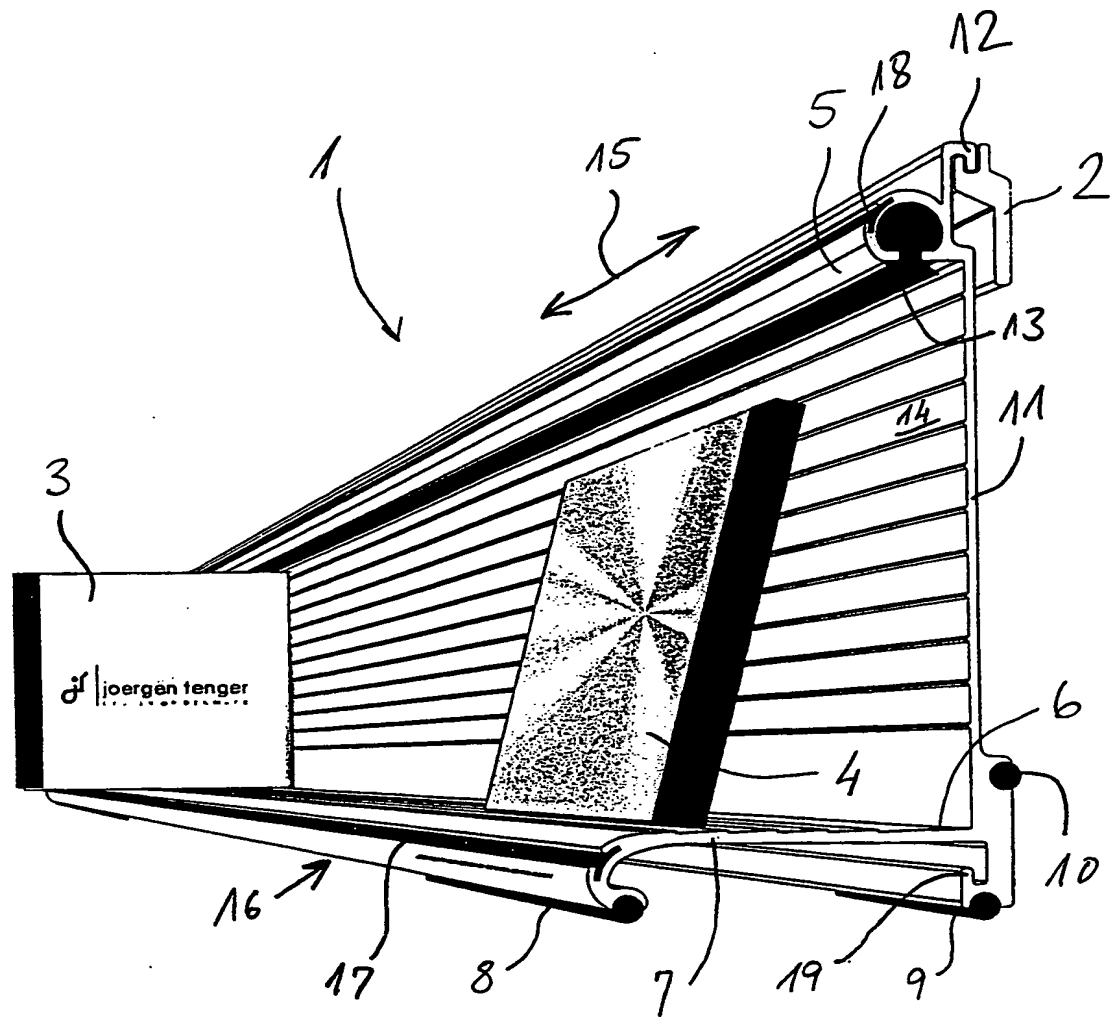
20. A carrying device according to claim 19, characterised in that the catching means and suspension means on two interconnected carrying 35 devices are meant for being locked together, preferably



in that a stiff wire is inserted in a channel constituted by recesses in both the catching means and the suspension means.

21. A carrying device according to any of the  
5 preceding claims, c h a r a c t e r i s e d in that the carrying device is of a form being elongate in the crosswise direction and having an essentially constant cross section.

22. A carrying device according to claim 21,  
10 c h a r a c t e r i s e d in that the supporting structure of the carrying device is constituted by an extruded, elongate metal blank.



*Fig. 1*

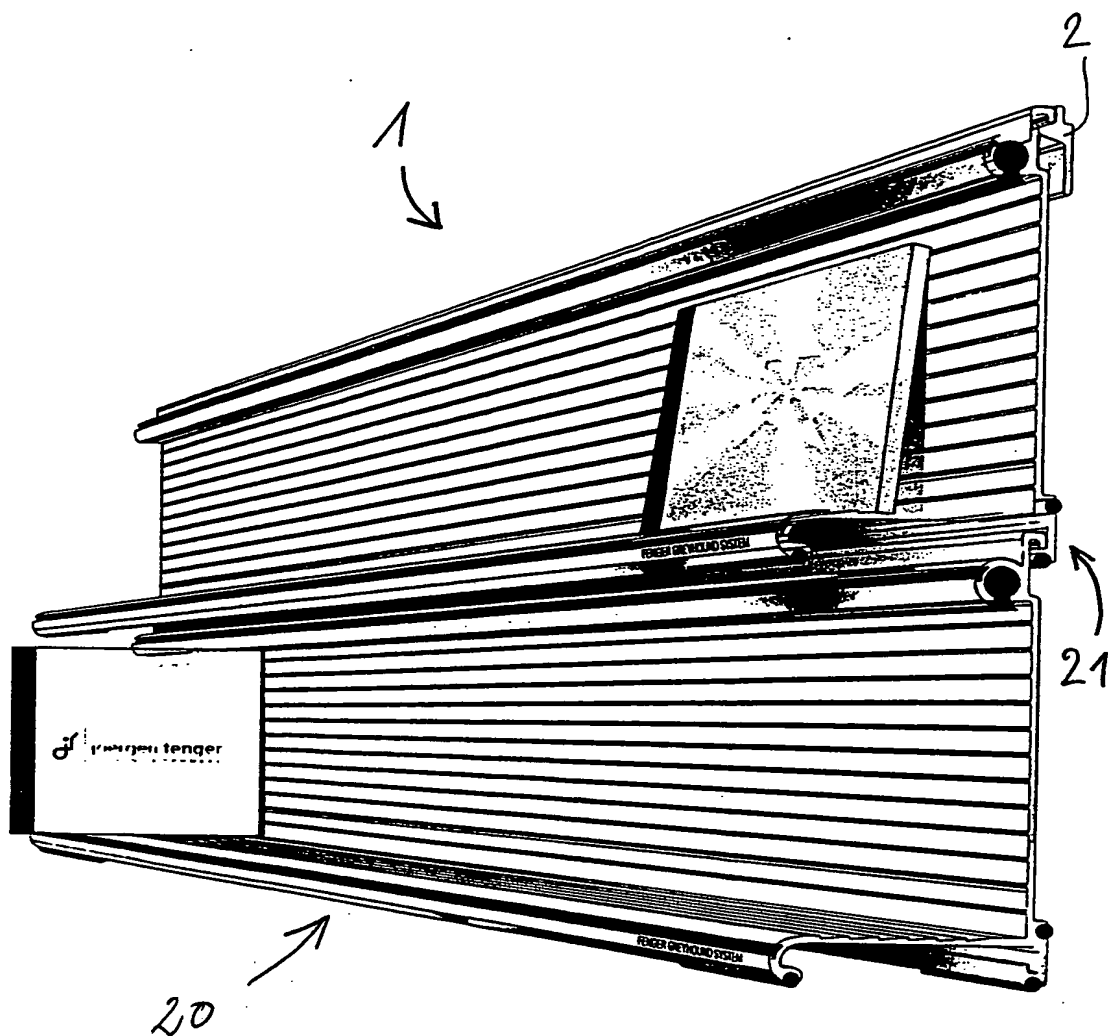
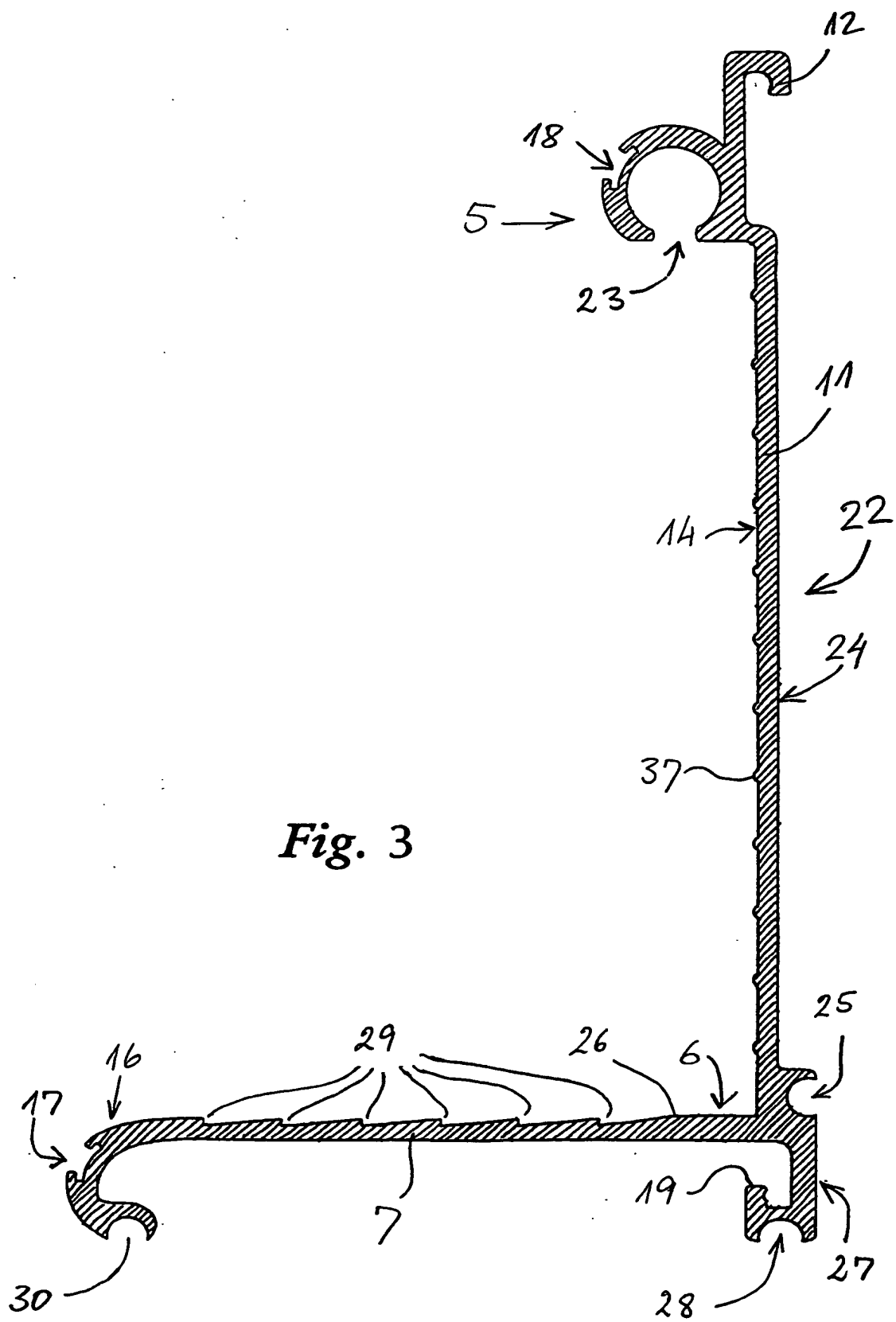
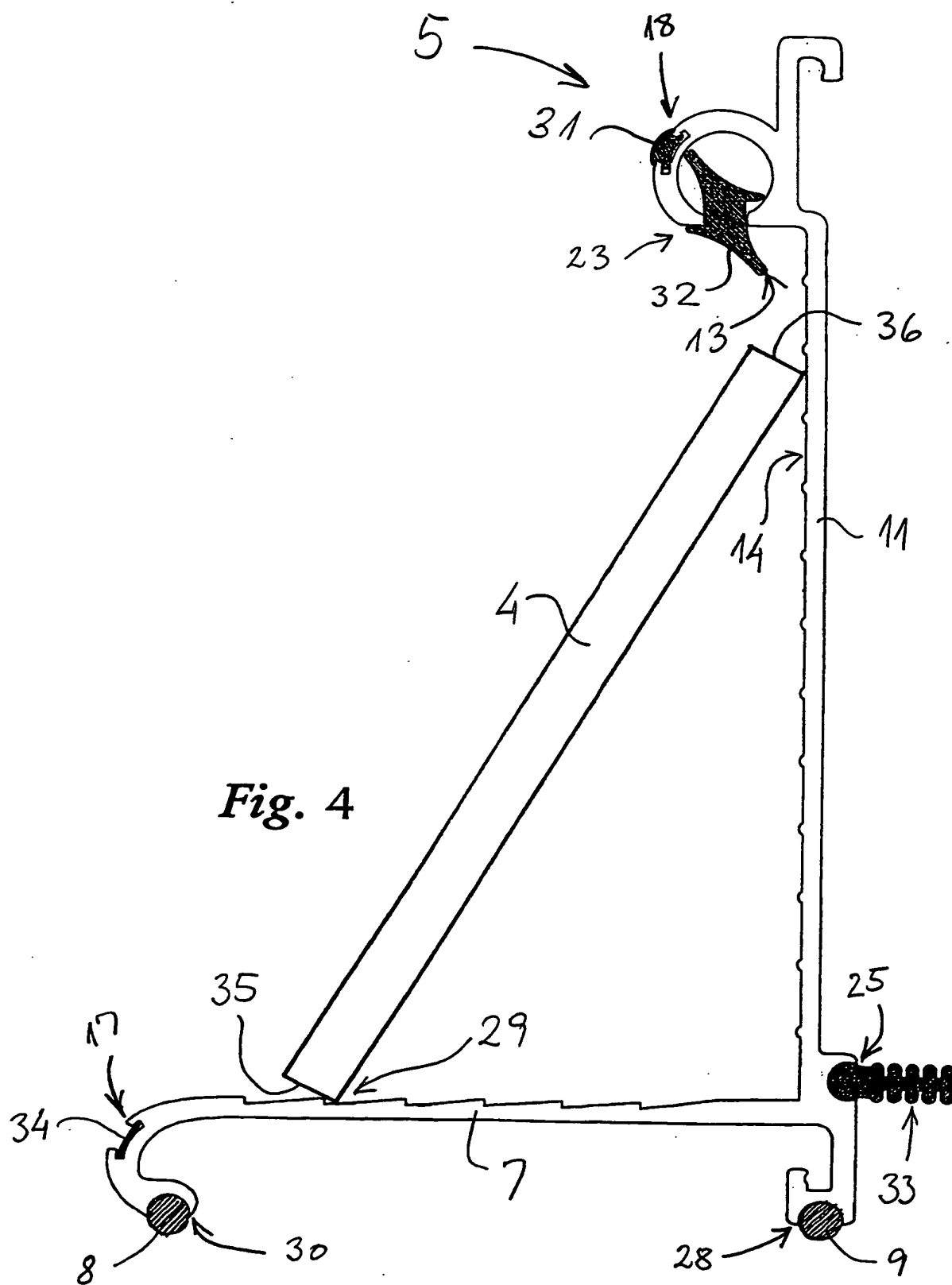


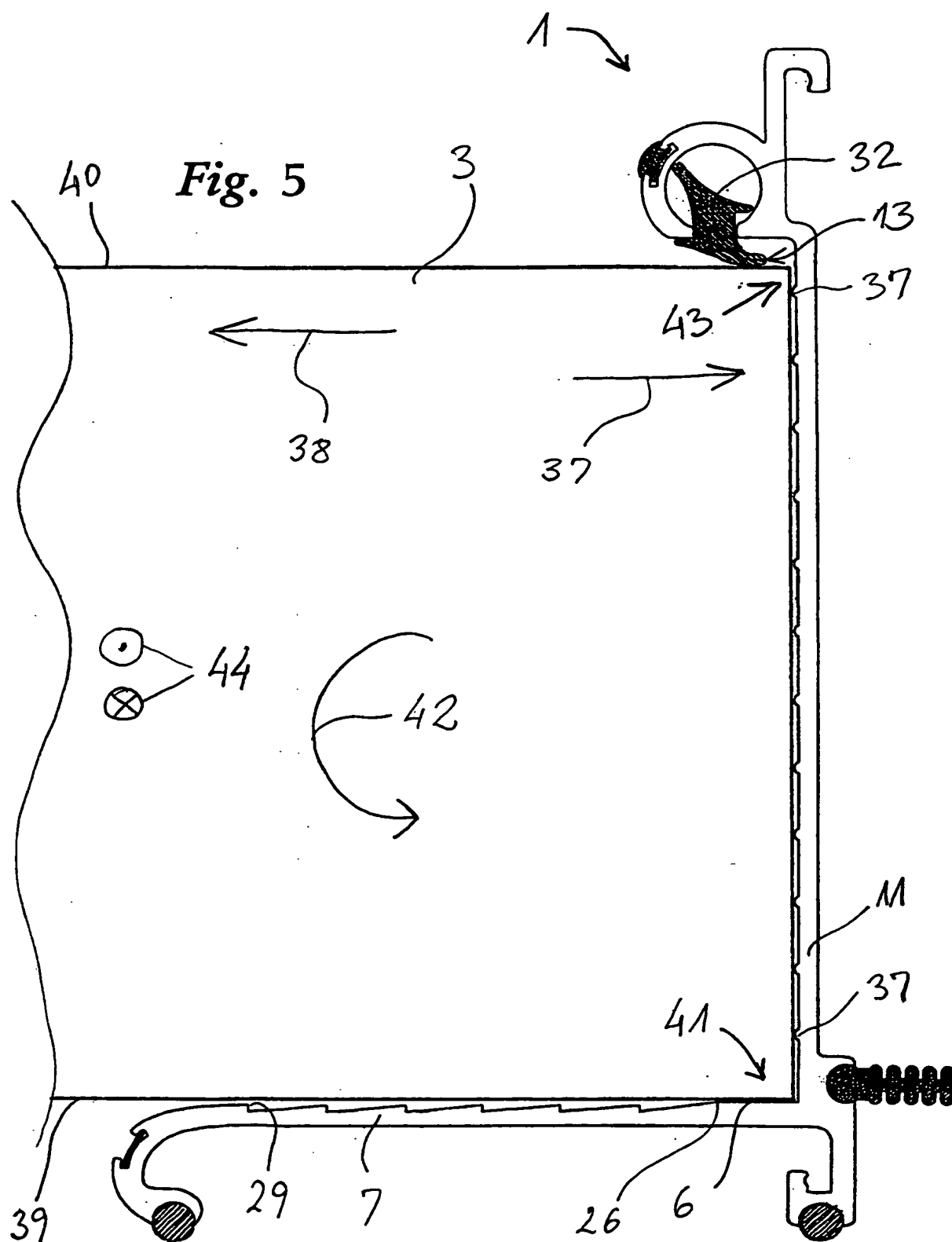
Fig. 2

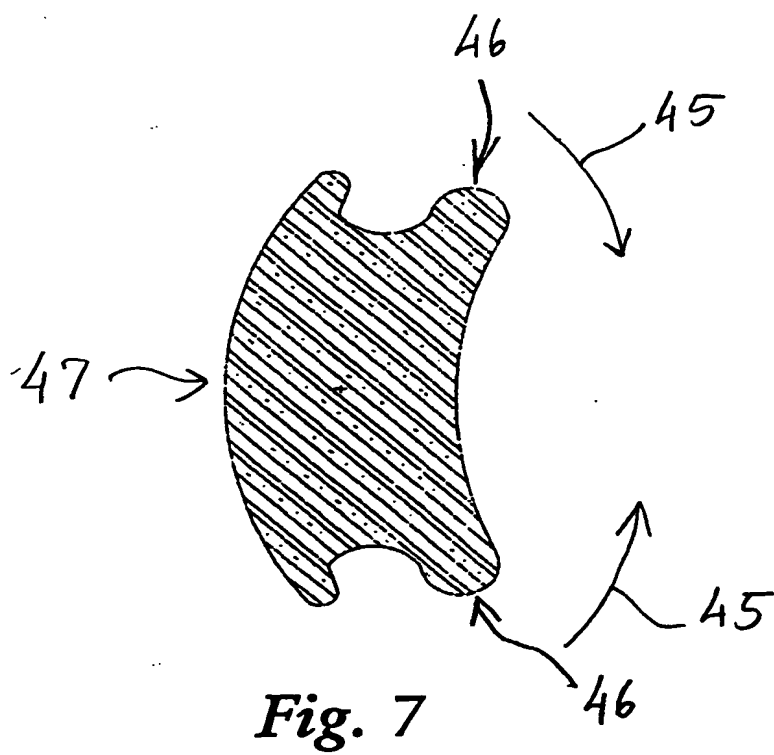
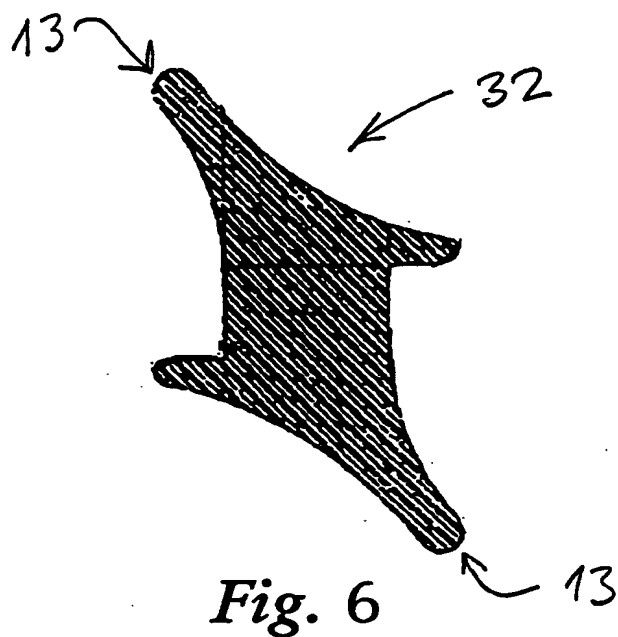


*Fig. 3*



**Fig. 4**





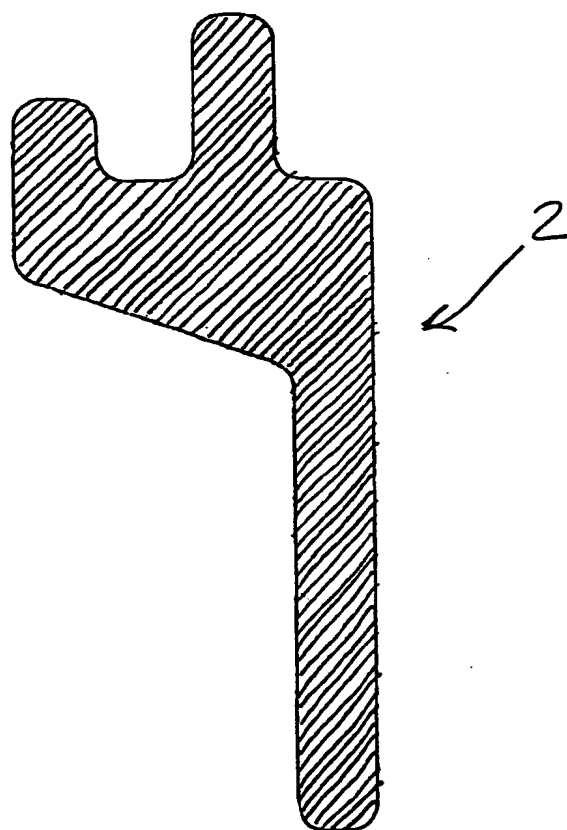
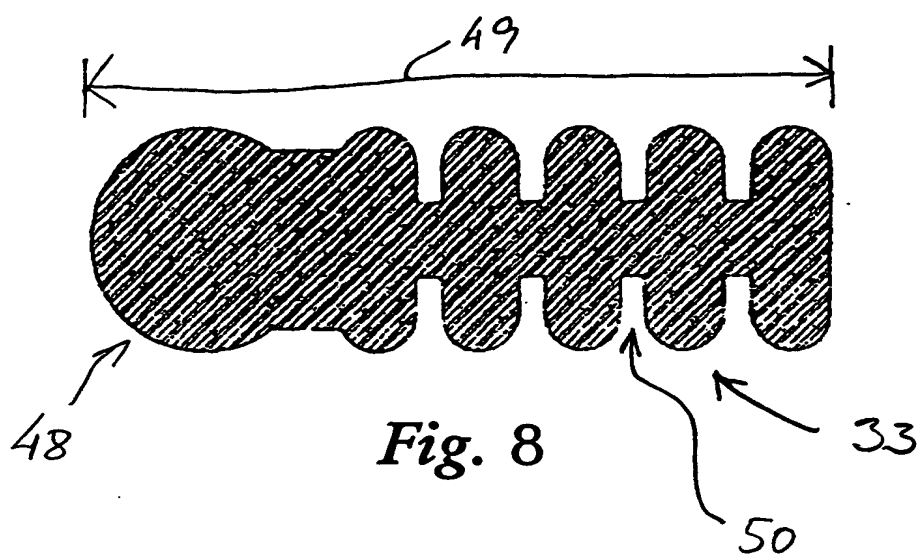
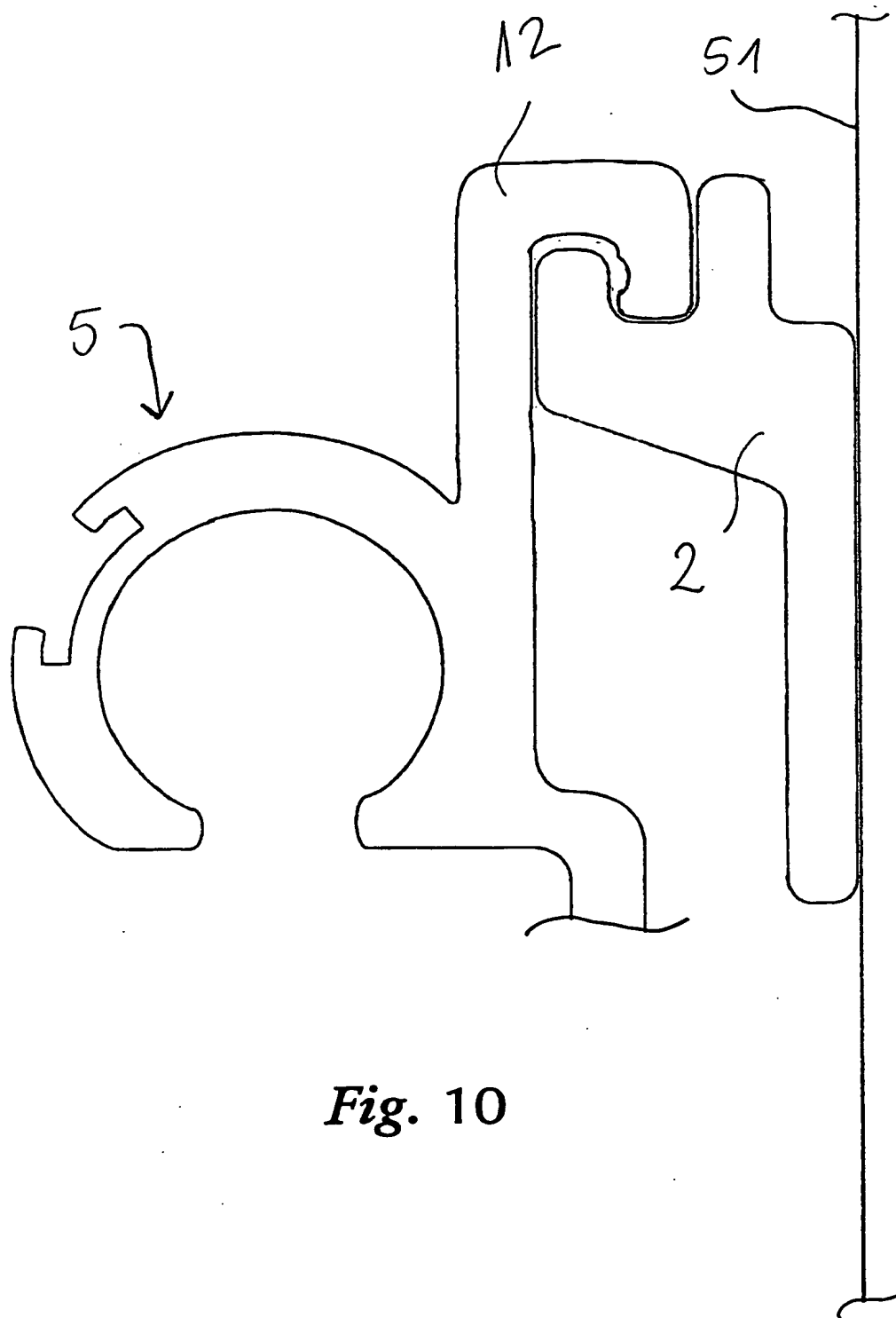
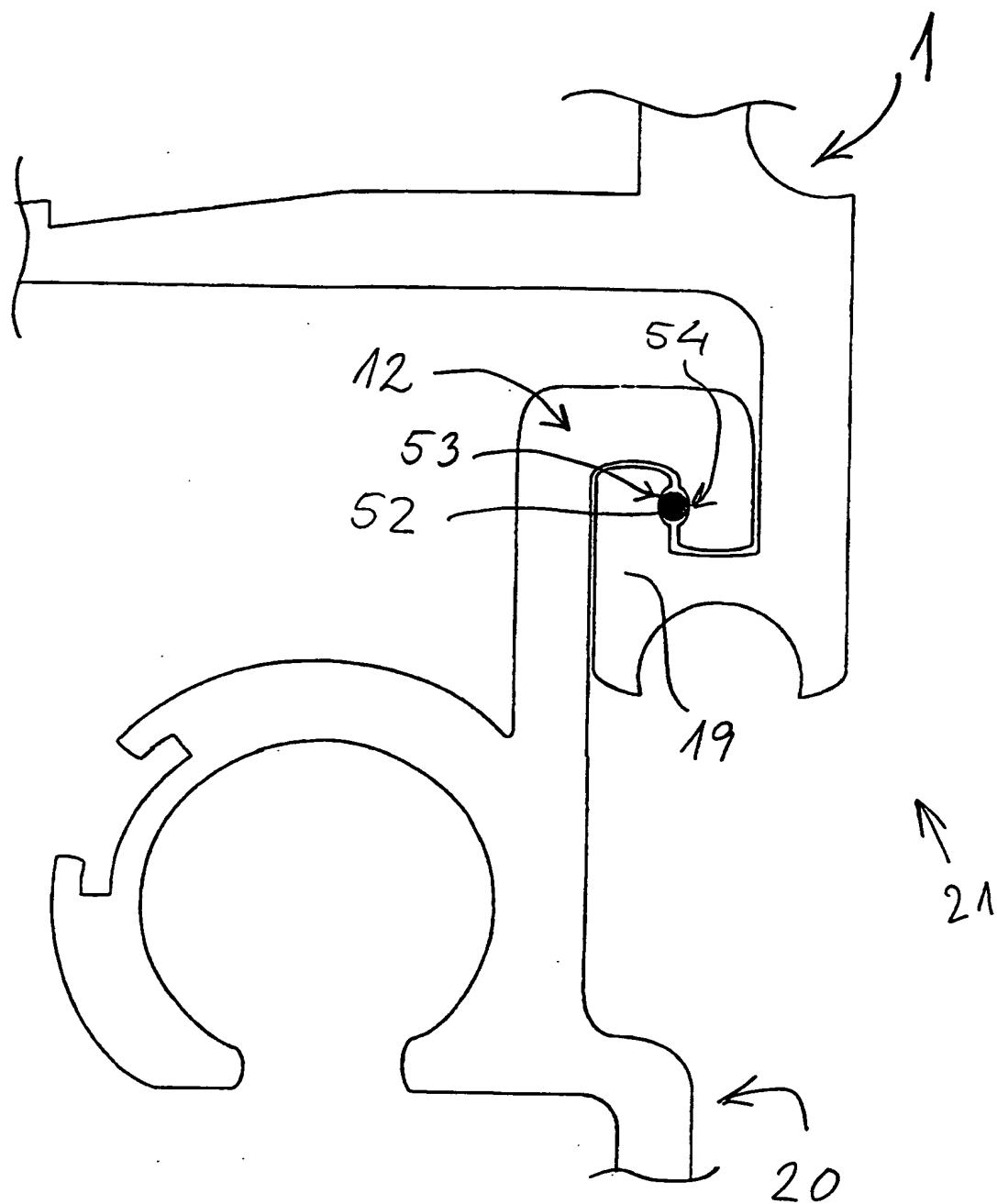


Fig. 9





*Fig. 10*

*Fig. 11*